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2024-1-TR01-KA210-ADU-000253544

INCREASING AGRICULTURAL LITERACY SKILLS OF ADULTS WITHIN THE SCOPE OF CIRCULAR ECONOMY ERASMUS+ PROJECT

WORK PACKAGE 4 – AGRICULTURAL MOBILE APPLICATIONS E-CATALOGUE



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1. Introduction

Today, digital technologies play a critical role in increasing efficiency in agricultural production, ensuring the sustainable management of resources, and supporting adaptation processes to climate change. Simultaneously, these technologies strengthen the green transition capacity of the agricultural sector by promoting the widespread adoption of sustainable farming practices. Within this context, digital tools and mobile applications act as a pivotal catalyst for operationalising the principles of the **circular economy** in the field, particularly through innovative approaches focused on waste reduction, resource recovery, reuse, and regenerative production models.

Mobile applications, which offer low-cost, accessible, and practical solutions for field use, provide **adult learners** with greater opportunities to leverage digital technologies effectively within agricultural processes. By delivering real-time data and incorporating decision-support mechanisms, these tools substantially enhance the **agricultural and digital literacy** skills among target groups and encourage more informed, data-driven participation in production cycles. In this respect, mobile technologies represent strategic instruments that support grassroots dissemination of green transition principles within the agricultural sector while systematically upgrading the technical competencies of adult learners.

To this end, this **E-catalogue**, which aims to mainstream agricultural practices rooted in waste management and resource recovery, has been prepared within the scope of the **Erasmus+ KA210 ADU** project numbered **2024-1-TR01-KA210-ADU-000253544**, coordinated by Kastamonu Public Education Centre (Türkiye) in partnership with Asociația Pentru Inovație în Educația Adulților (Romania), Lifelong Education Science Art Culture Association (Türkiye), and Associazione “Submeet – Incontrarsi per Crescere” (Italy).

The project titled “**Increasing Agricultural Literacy Skills of Adults within the Scope of Circular Economy – ThinkAgriCircular**” aims to integrate sustainable production cycles into agricultural value chains and raise the environmental consciousness of adult citizens. Developed under **Work Package 4** (WP-4) of the project, this E-catalogue has been designed to support the digital skills of a diverse stakeholder group, spanning from adult learners and educators to farmers and agricultural entrepreneurs. The study also aims to contribute to making circular economy principles and sustainable agricultural methodologies more widespread, accessible, and actionable through digital technologies.

The E-catalogue has been designed with a highly visual and systematic structure that facilitates users’ access to information. The applications included in the catalogue are classified under the following six main categories:

- 🚜 Digital Field and Farm Management
- 🌿 Plant Health and AI-Powered Diagnostics
- ☁️ Weather Forecasting and Early Warning Systems
- 📡 Remote Sensing and Satellite-Based Agriculture
- 🔄 Agricultural Circular Economy, Input, Emission and Waste Management
- 🧠 Smart Agriculture and Decision Support Systems (DSS)

To facilitate a more effective analysis of the digital tools and technical data presented, the sections “**Quick Access and Comparison Matrix**” and “**Glossary of Key Concepts and Abbreviations**” have been added to the end of the document. These sections, which include a matrix structure enabling the parametric comparison of the core functions of the applications as well as explanations related to agricultural literacy, digital terminology, and circular economy principles, have been prepared to support self-directed learning in adult education and to enhance the educational value of the study. In order to maximise transnational accessibility and optimise the international impact of the project, this E-catalogue has been made available in four languages: English, Turkish, Romanian, and Italian.

Shaped through the local experiences of the project partners and cross-border cooperation processes, this study benefits from both local solutions originating from Türkiye, Romania, and Italy, as well as examples of good practices implemented across Europe. In order to strengthen the modular and adult-learning-oriented structure of the E-catalogue, the digital tools under each category have been organised according to a systematic hierarchy ranging from global to local practices. Accordingly, users will first be able to examine internationally recognised multinational good practice examples at the European level, followed by unique national and local agricultural applications developed in the partner countries and other regional contexts. In the E-catalogue, each tool is presented under standard headings such as logo, country of origin, target group, key features, and application operational details (download availability, language options, etc.). In addition, QR code links providing direct access have been included to ensure instant and frictionless access.

Legal Notice and Disclaimer: The technical specifications, visuals, and logos of the applications included in this E-catalogue have been compiled strictly for educational and informational purposes from the official promotional pages of the relevant platforms (Google Play Store, App Store), developer disclosures, and the official websites of the applications themselves. In cases where application features or terms of use may change due to software updates, the official web pages of the relevant platforms and developers should be considered the definitive source. The information included in this E-catalogue has been fully updated as of May 2026. The content presented in the catalogue is solely intended to inform users about digital tools and does not imply any commercial endorsement, sponsorship, or advertising.

2. Categorized Directory of Agricultural Applications

2.1. Digital Field and Farm Management

2.1.1. Agrivi

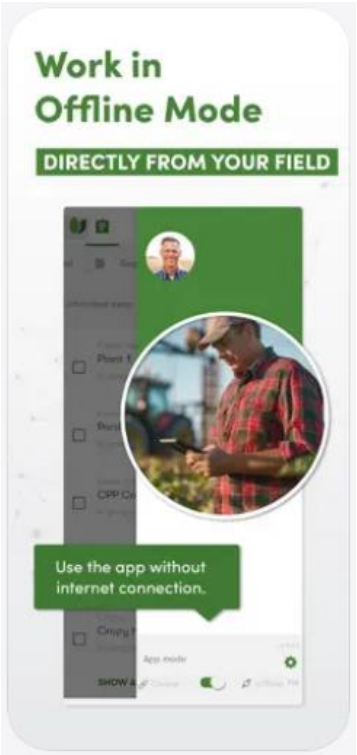
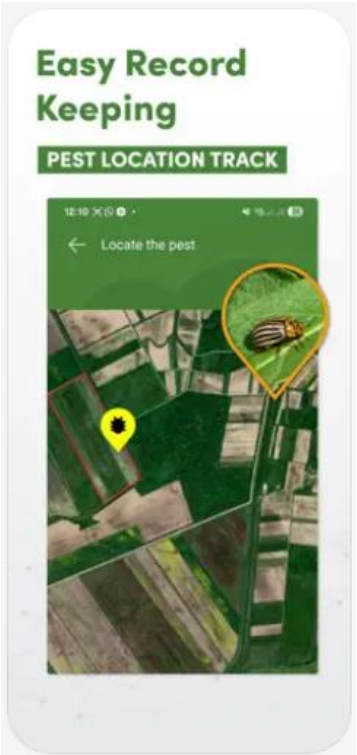


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Digital Farm Management Platform Supporting Agricultural Planning, Record-Keeping, and Yield Optimisation



Country of Origin	Croatia / Agrivi d.o.o. (Agrivi Ltd.)
Category	Digital Field and Farm Management
Target Group	• Farmers and agricultural producers • Agricultural cooperatives • Farm managers • Field teams and machinery operators • Agricultural engineers
Key Features	• Field and plot identification • Irrigation, harvesting, and production planning • Input-output and cost tracking • Yield analysis, reporting, and inventory management • Offline functionality and automatic data synchronisation • Records of sowing, fertilisation, and crop protection practices
Usage Method	The application functions as the mobile extension of the Agrivi Farm Management Software (web-based platform) used in the field. Users log into the system using their existing corporate subscription accounts. Field teams and managers can record planned activities, work orders, and production processes directly from the field while seamlessly integrating with the central management platform.
Benefits Provided	This application, which enables planning, monitoring, and analysis by digitalising the agricultural production workflows, • Facilitates the digital tracking of agricultural activities. • Supports the planning and recording of operations such as sowing, irrigation, fertilisation, and plant protection, contributing to more efficient management of production processes. • Provides real-time weather and climate data for fields, enabling producers to execute irrigation and spraying at the most appropriate times; thereby preventing the over-application of chemicals and water while protecting plant health. • Records the costs of inputs used and enables users to monitor the income-expenditure balance, supporting cost control and fostering more sustainable farming practices. • Allows production processes to be monitored through daily, weekly, and monthly reports, enabling stakeholders to identify the most effective practices and improve decision-making. • Optimises agricultural inputs, reduces waste, increases resource efficiency, and promotes sustainable agricultural models based on circular economy principles.
Registration Requirement	Required (An AGRIVI account and an active subscription are required)
Pricing	Paid (Based on corporate subscription; demo/trial access may be available)
Download Availability	Android and iOS + Web-based platform https://www.agrivi.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, the web interface is available in languages such as English, Italian, and Romanian)

Agrivi is an advanced digital solution that digitalises production processes to strengthen planning and traceability, supports circular economy principles by reducing agricultural input and resource waste through data-driven decision-making mechanisms, and simultaneously enhances the agricultural and digital literacy skills of its users.

2.1.2. xFarm



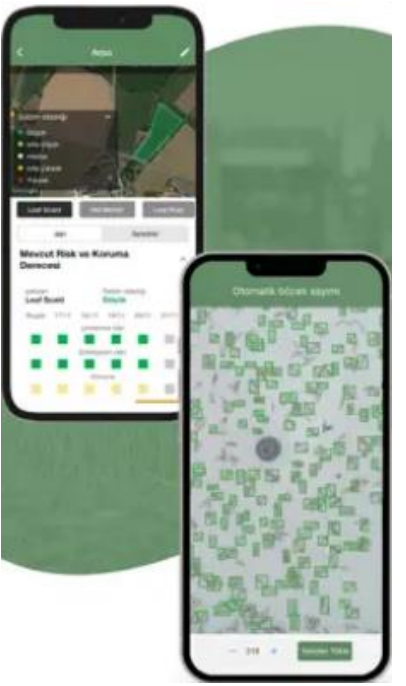
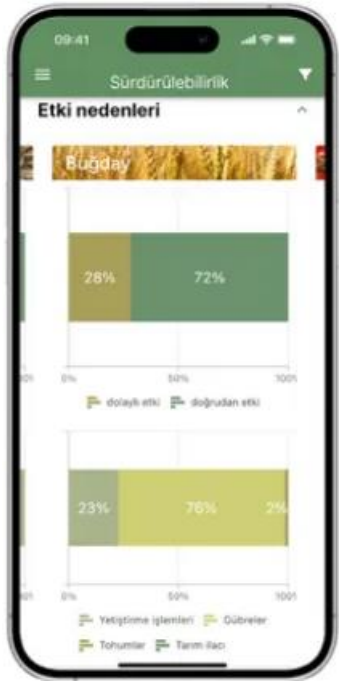
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Digital Agriculture and Smart Farm Management Platform Enhancing Resource Efficiency

Country of Origin	Italy / xFarm Technologies Italia S.r.l. (xFarm Technologies Italia Ltd.)
Category	Digital Field and Farm Management
Target Group	- Farmers and agricultural producers - Agricultural cooperatives - Farm managers
Key Features	- Map-based field and plot management - Inventory, logistics, and document management - Pest monitoring, forecasting, and disease alert systems - Machinery, equipment, and telemetry management - Financial analysis, cost tracking, and reporting - Sustainability and environmental impact (carbon footprint) analysis - Crop protection products, dosage, and disease tracking - Integration of satellite, sensor, and meteorological data - Prescription and variable rate application - Irrigation management and integration with automation systems - Records of sowing, fertilisation, plant protection, and field activities
Usage Method	Users log into the system by creating an account. Agricultural fields are defined on a map, and crop and activity data are recorded in the system. The platform facilitates the streamlined oversight of work orders, field operations, and production processes through a single integrated platform.
Benefits Provided	This application, which digitalises farm management and enables monitoring and optimisation of production processes through a single platform, - Optimises the use of fertilisers, seeds, water, and fuel, thereby reducing costs and labour requirements, preventing waste, and increasing efficiency. - Through specialised sustainability modules, it contributes to carbon and water footprint analysis and directly supports the implementation of circular economy principles by mitigating input waste. - Reduces risks and prevents crop losses through predictive early warning alerts related to diseases, pests, and weather conditions. - Provides the ability to monitor and optimise the entire farm from a single point through satellite, sensor, and machinery integration. - Strengthens the economic control of the farm through inventory, document, and financial management tools. - Supports informed decision-making processes through advanced reporting and data analytics. - Offers the ability to generate reports and documentation that can support certification processes. - Converts meteorological and satellite data into actionable recommendations, thereby enhancing the technical knowledge of producers. (The specified features may vary depending on system integrations and the subscription package.)
Registration Requirement	Required
Pricing	Free of charge for basic use + Paid plans for advanced features
Download Availability	Android, iOS Web site: https://www.xfarm.ag/tr
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)



xFarm is a comprehensive smart farm management platform that strengthens digital management by improving resource efficiency in production processes, contributes to sustainable production by reducing the carbon footprint through a circular economy approach, and systematically supports users’ agricultural and digital literacy skills.

2.1.3. Agricolus



Digital Platform Supporting Farm Management and Crop Monitoring through Precision Agriculture Technologies



Country of Origin	Italy / Agricolus S.r.l. (Agricolus Ltd.)
Category	Digital Field and Farm Management
Target Group	👨🌾 Farmers and agricultural producers 🍇 Vineyard growers 🔍 Precision agriculture practitioners 🌿 Agricultural consultants
Key Features	📍🗺️ Field mapping and geolocation ☁️🌦️ Weather forecasts and meteorological data 📷📸 Multimedia notes, photo and audio recordings 🦋🐛 Pest and disease monitoring, trap and capture records 🚨⚠️ Risk alerts, warnings, and reporting systems 📊🍇 Product quality and yield monitoring (especially for viticulture) 📅🌱 Phenological development tracking and production process monitoring 📈🗨️ Predictive models (irrigation, fertilisation, crop protection) 👤📱 User-friendly interface 🛰️🌿 Satellite imagery and field health monitoring (vegetation vigour, chlorophyll, water stress)
Usage Method	Users log into the system by creating an account. Fields are defined on a map, and crop and activity data are recorded in the system. All production processes are monitored through a single platform by leveraging satellite imagery and weather data.
Benefits Provided	This application, which enhances field monitoring and management efficiency by digitalising agricultural production processes, • Contributes to managing the production process more efficiently by enabling continuous monitoring of fields. • Through smart predictive models, it ensures that water, fertiliser, and crop protection products are applied at the right time and in the right amount, thereby minimising chemical and resource waste while directly supporting circular economy principles. • Monitors and evaluates crop development at early stages utilising satellite and index data. • Reduces pest and disease risks through integrated early warning systems. • Strengthens planning and management processes by analysing field data. • Increases product value, particularly in viticulture, through harvest timing optimisation and quality monitoring. • Strengthens traceability by ensuring agricultural processes are digitally recorded.
Registration Requirement	Required
Pricing	Free of charge for the basic version (with a field limit of up to 10 hectares) + Paid packages
Download Availability	Android, iOS Web site: https://www.agricolus.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including Italian, English, and Spanish)

Agricolus is a comprehensive farm management platform that digitalises agricultural production processes through precision agriculture technologies, supports data-driven management, enhances agricultural and digital literacy skills, and contributes to resource efficiency through a circular economy approach.

2.1.4. AgroVIR Agronomist



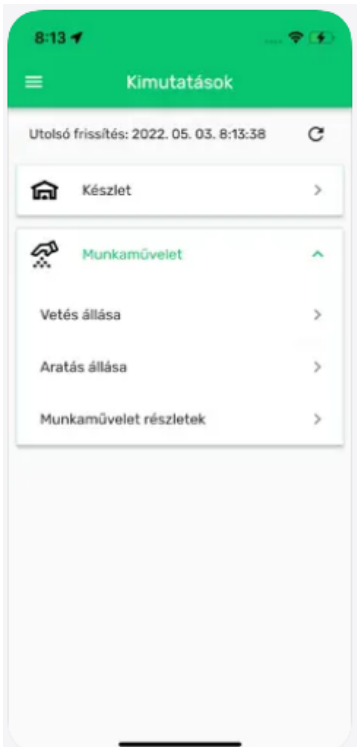
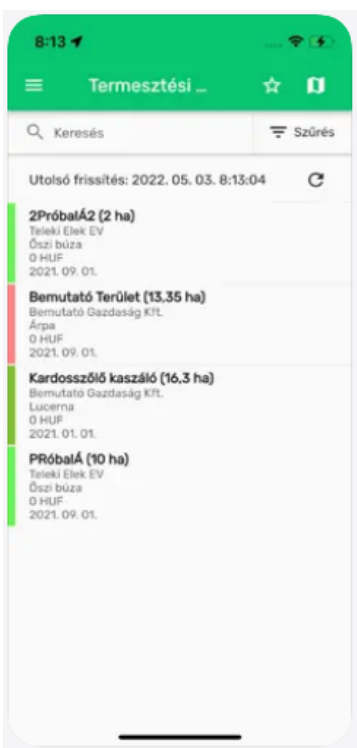
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Digital Farm Application Enhancing Traceability of Agricultural Activities and Resource Efficiency

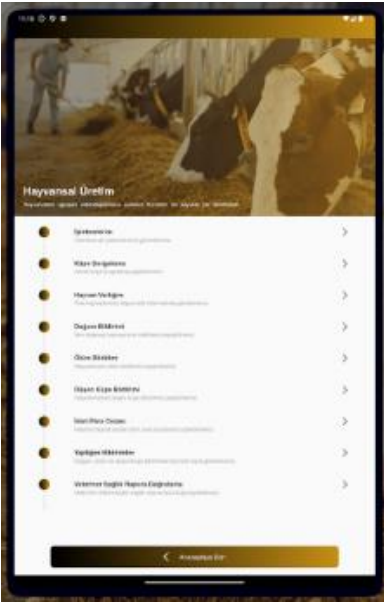
	<table><tr><td>Country of Origin</td><td>Hungary / AGROVIR Üzletviteli Tanácsadó Korlátolt Felelősségű Társaság (AGROVIR Business Consulting Ltd.)</td></tr><tr><td>Category</td><td>Digital Field and Farm Management</td></tr><tr><td>Target Group</td><td> 👨‍🌾 Farmers 🏢 Agricultural enterprise managers 🌿 Agronomists and agricultural consultants 🌍 Producers aiming for sustainable resource management </td></tr><tr><td>Key Features</td><td> 📍 Location-based recording of field observations and photos 💰 Profitability analysis and reporting 📦 Traceability of labour, fuel, and inventory usage 📊 Monitoring and analysis of input usage, costs, and environmental impact 🔄 End-to-end digital monitoring and management of agricultural activities and costs </td></tr><tr><td>Usage Method</td><td>AgroVIR is the mobile extension of the cloud-based AgroVIR Farm Management Software used in the field. Users log into the system with their assigned AgroVIR account credentials. Field observations, work orders, fuel and inventory transactions are recorded through the application and synchronised with the central system.</td></tr><tr><td>Benefits Provided</td><td> This application, which enables a more transparent and sustainable management approach by digitalising agricultural production processes, - Supports digital transformation in farm management by recording every stage of agricultural activities and minimising administrative time loss. - Optimises input costs and resource use, supporting a highly efficient production model with lower energy and resource consumption, while contributing to the circular economy by preventing waste. - Increases crop performance and profitability by enabling the early detection of risks through real-time field data and on-site observations. - Promotes informed agricultural practices aimed at protecting natural resources by making the environmental impacts of production processes visible. - Contributes to the development of users’ smart farming and digital literacy skills by facilitating the tracking of complex operational data through digital tools. </td></tr><tr><td>Registration Requirement</td><td>Required</td></tr><tr><td>Pricing</td><td>Paid (Based on a corporate and professional subscription model)</td></tr><tr><td>Download Availability</td><td>Android and iOS + Web-based platform https://www.agrovir.com</td></tr><tr><td>Daily Usage Limit</td><td>Not specified</td></tr><tr><td>Language</td><td>Multilingual support (depending on the platform, including English and Romanian)</td></tr></table>	Country of Origin	Hungary / AGROVIR Üzletviteli Tanácsadó Korlátolt Felelősségű Társaság (AGROVIR Business Consulting Ltd.)	Category	Digital Field and Farm Management	Target Group	👨‍🌾 Farmers 🏢 Agricultural enterprise managers 🌿 Agronomists and agricultural consultants 🌍 Producers aiming for sustainable resource management	Key Features	📍 Location-based recording of field observations and photos 💰 Profitability analysis and reporting 📦 Traceability of labour, fuel, and inventory usage 📊 Monitoring and analysis of input usage, costs, and environmental impact 🔄 End-to-end digital monitoring and management of agricultural activities and costs	Usage Method	AgroVIR is the mobile extension of the cloud-based AgroVIR Farm Management Software used in the field. Users log into the system with their assigned AgroVIR account credentials. Field observations, work orders, fuel and inventory transactions are recorded through the application and synchronised with the central system.	Benefits Provided	This application, which enables a more transparent and sustainable management approach by digitalising agricultural production processes, - Supports digital transformation in farm management by recording every stage of agricultural activities and minimising administrative time loss. - Optimises input costs and resource use, supporting a highly efficient production model with lower energy and resource consumption, while contributing to the circular economy by preventing waste. - Increases crop performance and profitability by enabling the early detection of risks through real-time field data and on-site observations. - Promotes informed agricultural practices aimed at protecting natural resources by making the environmental impacts of production processes visible. - Contributes to the development of users’ smart farming and digital literacy skills by facilitating the tracking of complex operational data through digital tools.	Registration Requirement	Required	Pricing	Paid (Based on a corporate and professional subscription model)	Download Availability	Android and iOS + Web-based platform https://www.agrovir.com	Daily Usage Limit	Not specified	Language	Multilingual support (depending on the platform, including English and Romanian)	
Country of Origin	Hungary / AGROVIR Üzletviteli Tanácsadó Korlátolt Felelősségű Társaság (AGROVIR Business Consulting Ltd.)																							
Category	Digital Field and Farm Management																							
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Registration Requirement	Required																							
Pricing	Paid (Based on a corporate and professional subscription model)																							
Download Availability	Android and iOS + Web-based platform https://www.agrovir.com																							
Daily Usage Limit	Not specified																							
Language	Multilingual support (depending on the platform, including English and Romanian)																							
																								

AgroVIR Agronomist is an innovative management solution that digitalises production processes to strengthen planning and traceability, supports sustainability through the efficient use of resources, and contributes to the development of digital literacy skills by transforming agricultural data into meaningful, decision-supporting insights.

2.1.5. Tarım Cebimde



Digital Platform Providing Access to Official Agricultural Information, Support, and Services for Farmers



Country of Origin	Türkiye / Tarım ve Orman Bakanlığı (Ministry of Agriculture and Forestry)
Category	Digital Field and Farm Management
Target Group	👨‍🌾 Farmers (Producers registered in the Farmer Registration System - FRS / ÇKS) 👨‍🔬 Agricultural entrepreneurs 🐄 Individuals engaged in livestock farming, aquaculture, beekeeping, and urban agriculture
Key Features	🌾🐄 Crop and livestock production information 💰📅 Agricultural subsidies and payment schedules 🔍👂 Ear tag and livestock information lookup 🐟🐠 Fisheries and aquaculture information 📺📖 Training videos and guidance materials 🏠🐾 Urban agriculture and pet-related information 🐝🐝🌿 Beekeeping, hunting, and greenhouse production information
Usage Method	Tarım Cebimde is an official digital platform integrated with e-Devlet (the Turkish e-Government gateway). Users can view their Farmer Registration System (FRS) records and parcel details, whilst accessing official services related to livestock farming, fisheries, beekeeping, urban agriculture, and other agricultural activities.
Benefits Provided	This application, which enables farmers to access official information related to their agricultural activities via mobile devices, • Provides agricultural data within a single integrated platform. • Reduces time loss and travel costs by enabling location- and time-independent access to information. • Facilitates official procedures such as generating FRS documents and tracking subsidy applications through e-Devlet integration. • Prevents the loss of entitlements by providing quick access to up-to-date agricultural subsidies, grants, and official announcements. • Supports the improvement of users’ technical capacity alongside their agricultural and digital literacy levels through training modules, guidance materials, and videos. • Promotes a more informed use of resources in the agricultural ecosystem by encouraging planning and data-driven management processes based on official data, thereby indirectly contributing to circular economy processes.
Registration Requirement	A Farmer Registration System (FRS) record and an e-Devlet account are required for farmers and official procedures. Registration is not required for accessing general information.
Pricing	Free of charge
Download Availability	Android, iOS, Huawei AppGallery Web site: https://tarimcebimde.tarimorman.gov.tr/
Daily Usage Limit	Not specified (Some e-Devlet transactions may be subject to daily usage limits)
Language	Turkish and English

Tarım Cebimde is a public-sector application that integrates official services into a single platform, accelerating farmers’ access to information, strengthening digital and agricultural literacy skills, and supporting a circular economy approach by preventing resource waste in agricultural processes through accurate data management.

2.2. Plant Health and AI-Powered Diagnostics

2.2.1. Plantix – Your Crop Doctor

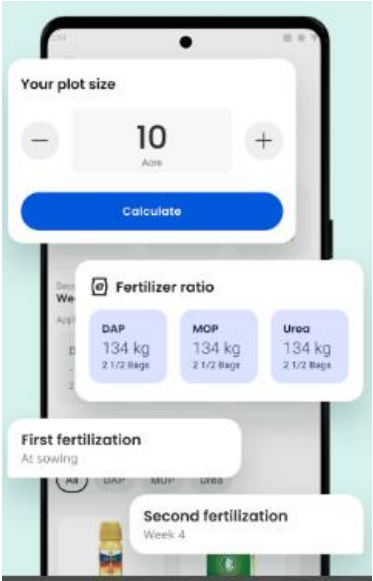


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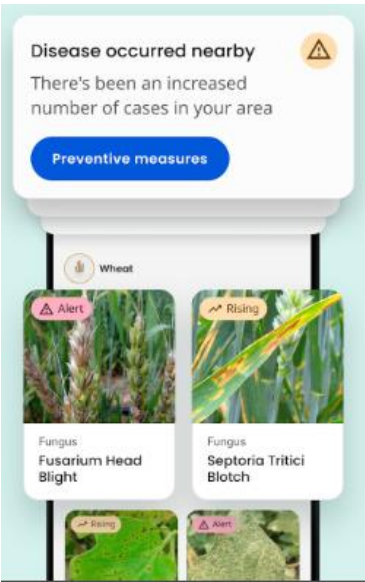


Visit the official web site
No iOS version available

AI-Powered Plant Disease Diagnosis and Treatment Guide for Smart Agriculture



Country of Origin	Germany / Peat GmbH (Peat Ltd.)
Category	Plant Health and AI-Powered Diagnostics
Target Group	👨🏫 Farmers and large-scale producers 🍎 Vegetable growers and gardeners 🌿 Agricultural consultants and agriculture students 📖 Adult learners seeking to enhance their agricultural knowledge through digital tools
Key Features	🌿🔍 Visual diagnosis 🌿🐛 Disease and pest alerts 🌿💡 Comprehensive treatment recommendations 🌐🗣️ Community forum 📊🌱 Fertiliser calculator 🌤️🌿 Weather forecast data 📖🌿 Agricultural information and cultivation tips
Usage Method	After downloading the application, a photo of the plant to be identified is taken or uploaded from the gallery. The AI analyses the image and identifies plant diseases, pests, or nutrient deficiencies, and provides users with appropriate treatment methods, crop protection recommendations, and prevention strategies. Observations can optionally be saved and shared within the community forum.
Benefits Provided	This application, which is designed to protect plant health in production processes and increase productivity, • Mitigates crop losses by detecting diseases at an early stage, thereby supporting the economic sustainability of producers. • Provides tailored treatment methods, plant care recommendations, and prevention strategies for each identified disease. • Reduces unnecessary, incorrect, or excessive use of chemicals (pesticides) through recommendations for proper precise chemical application and biological control methods, thereby preventing agricultural waste generation. • Enables users to develop their agricultural and digital literacy skills through practical application via a rich knowledge base and community support. • Prevents over-fertilisation by accurately calculating the required fertiliser amount, thereby protecting soil health and groundwater resources while contributing to circular economy principles.
Registration Requirement	Required (Recommended for community features and historical tracking)
Pricing	Free of charge (Corporate solutions and additional services may vary depending on the developer)
Download Availability	Android Web site: https://www.plantix.net
Daily Usage Limit	The free version may include limited analysis access
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)

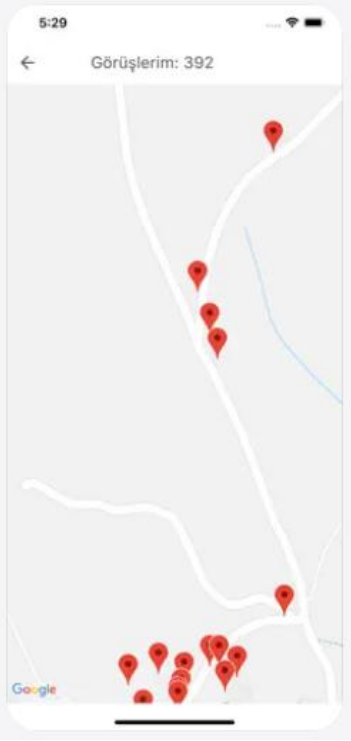


Plantix-your crop doctor is a pioneering digital platform that protects plant health through AI-powered analysis, supports circular economy principles by optimising resource use, and strengthens agricultural and digital literacy skills by providing producers with a comprehensive knowledge network.

2.2.2. Plantnet (PI@ntnet)



Scientific Observation Platform for Biodiversity Detection and Ecosystem Monitoring

	Country of Origin	France / Consortium Inria, CIRAD, INRAE, IRD, Institut National De Recherche En Informatique Et En Automatique (The Inria, CIRAD, INRAE, and IRD Consortium, National Institute for Research in Digital Science and Technology)
	Category	Plant Health and AI-Powered Diagnostics
	Target Group	👨‍🌾 Farmers 🌿 Gardeners 🎓 Agriculture students 🔬 Researchers and academics 🌳 Adult learners interested in nature
	Key Features	🔍 AI-based visual identification 🌐 Citizen science contribution system ★ Save favourites and access detailed plant information 🌿 Extensive plant database and taxonomic classification 📍 Observation recording and mapping
	Usage Method	The user takes a photo of the plant through the application or uploads an image from the gallery. The AI compares the image with global flora databases to instantly provide the plant's species, taxonomic classification, mapped locations, and detailed information sheets. If desired, the observation can be recorded and contributed to the global scientific data pool.
	Benefits Provided	This application, which digitalises agricultural production processes and enhances plant identification alongside biodiversity monitoring efficiency, - Enables fast and accurate plant identification, increasing agricultural knowledge levels and supporting more informed decision-making in production processes. - Enhances users' agricultural and ecological awareness through detailed information on plant species, facilitating the distinction between wild and cultivated plants. - Allows users to upload data from their own observations, engaging individuals in citizen science and supporting global scientific research initiatives. - Supports the recording of biodiversity and endemic species, contributing to ecosystem conservation, the sustainability of natural resources, and green transition processes. - Strengthens users' digital skills by enabling structured observation and analysis processes, thereby improving their digital literacy.
	Registration Requirement	Optional (Creating an account is recommended to record observations and contribute to the global scientific data pool)
	Pricing	Free of charge
	Download Availability	Android, iOS Web site: https://identify.plantnet.org/
	Daily Usage Limit	Not specified
	Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)
		

PlantNet (PI@ntnet) is an innovative application that, through its AI-powered plant identification system, enhances agricultural and digital literacy, supports biodiversity monitoring and ecosystem health, enables users to contribute to scientific research by recording and sharing observations, and promotes sustainability and circular economy practices.

2.2.3. Flora Incognita



AI-Powered Application Transforming Plant Identification Processes into Scientific Data Generation



Country of Origin	Germany / Technische Universität Ilmenau (Ilmenau University of Technology)
Category	Plant Health and AI-Powered Diagnostics
Target Group	👨🌾 Farmers 🌿 Gardeners 🎓 Agriculture, Biology, and Ecology students 🔬 Researchers and academics 🌲 Adult learners interested in nature
Key Features	🔍 AI-driven visual identification 🌐 Citizen science contribution system 📍 Observation recording and location-based mapping 📖 Educational content and scientific updates 📱 Sharing of observations on digital platforms 🔕 Offline functionality 🌱 Comprehensive plant database and scientific species profiles
Usage Method	The user captures a photo of the plant through the application (even when it is not in bloom). The integrated AI analyses the image and identifies the plant species within seconds, and provides the user with a detailed information sheet including its health and conservation status, distribution, and morphological characteristics.
Benefits Provided	This application, which facilitates plant species identification and biodiversity monitoring through AI-driven image analysis, - Enables the fast and accurate identification of all types of plants, including wild species, thereby enhancing agricultural literacy and supporting more informed decision-making in production processes. - Increases ecological awareness by providing scientific information on plant species and improving the understanding of biodiversity. - Supports users’ digital literacy skills through the practical use of technological observation tools, encouraging active contributions to scientific research. - Contributes to biodiversity monitoring, invasive species tracking, and the analysis of climate change impacts through robust data collection and analysis. - Promotes the protection of natural habitats and the maintenance of ecological balance, thereby supporting the environmental dimension of circular economy principles.
Registration Requirement	Optional (Required for synchronising observations across devices and contributing data to the scientific community)
Pricing	Free of charge and ad-free
Download Availability	Android, iOS Web site: https://floraincognita.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)

Flora Incognita is an innovative guide that uses AI-based plant identification to enhance users’ agricultural, ecological, and digital literacy, transforms observations into scientific data to support biodiversity monitoring and ecosystem health, and promotes active participation in scientific research with a focus on nature conservation awareness.

2.2.4. Planta: AI Plant & Garden Care



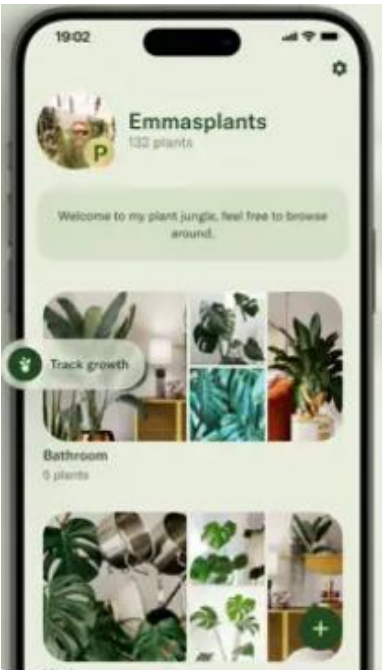
Scan for Android



Scan for iOS

AI-Powered Plant Health Monitoring, Light Measurement, and Digital Care Guide

Country of Origin	Sweden / Planta AB (Planta Ltd.)
Category	Plant Health and AI-Powered Diagnostics
Target Group	🔗 Gardeners 📖 Plant communities and education-focused users 🌿 Garden owners and landscape entrepreneurs 🎓 Adult learners interested in botany and agricultural education
Key Features	🔍🌿 AI plant identifier and disease diagnosis (Dr. Planta) 🌿📅 Smart care reminders ☀️🌿 Light meter and location recommendations 📅🌿 Plant diary and growth tracking 🌐👥 Care sharing and community interaction
Usage Method	After downloading the application, a user account is created. The plant to be identified is photographed or uploaded from the gallery, and its species is determined within seconds. Then, utilising the smartphone’s built-in sensors, the light conditions of the plant’s location are measured. The plant is subsequently saved in the system and digitally monitored according to its species-specific smart care schedule and growth diary.
Benefits Provided	This AI-powered application, which allows users to digitally record their plants and monitor health and care processes, - Enhances agricultural knowledge and supports informed care decisions by enabling accurate plant identification and the early detection of diseases. - Prevents excessive resource use and water waste by providing species-specific care schedules and information on light, water, and fertilisation needs, thereby promoting circular economy principles at a home or hobby farming scale. - Engages users in the digital monitoring process and contributes to sustainable production practices by allowing them to track and share plant care data. - Facilitates plant health and productivity optimisation by enabling growth tracking through photo-based diaries. - Strengthens digital and agricultural literacy by providing practical experience and hands-on learning through the application.
Registration Requirement	Not required for basic use. Required for observation sharing, synchronisation, personalised care schedules, and data tracking.
Pricing	Free of charge for the basic version + Premium subscription
Download Availability	Android, iOS Web site: https://getplanta.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English and Italian)



Planta: AI Plant & Garden Care is a comprehensive digital platform that makes plant care more informed by utilising AI and sensor technologies, enhances users’ agricultural and digital skills, supports sustainable gardening and ecosystem management practices, and enables plant health monitoring, growth tracking, and community interaction.

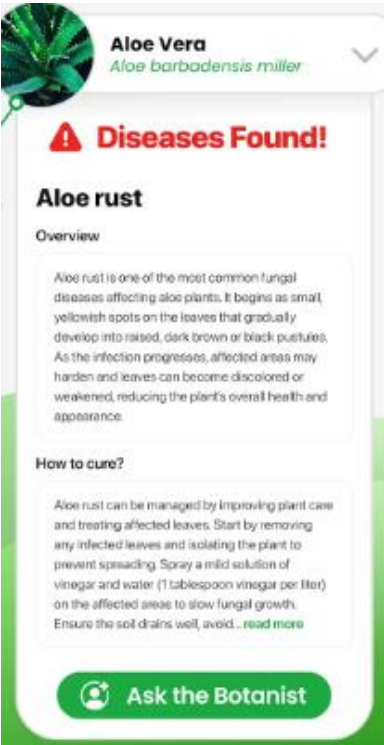
2.2.5. Plant App: Plant Identifier



AI-Powered Plant Identification, Disease Diagnosis, and Smart Care Guide



Country of Origin	Türkiye / ScaleUp Yazılım Hizmetleri A.Ş. (ScaleUp Software Services Inc.)
Category	Plant Health and AI-Powered Diagnostics
Target Group	👨‍🌾 Farmers and agricultural producers 🏡 Sustainable gardening and urban farming enthusiasts 🌱 Adult learners who are beginners in plant cultivation 🔧 Agricultural technicians and consultants
Key Features	🔍📷 Real-time identification using AI 🐛🌿 Disease and pest detection 💧🌱 Personalised plant care 📋🌿 Plant information and reporting 🕒📅 Smart reminders 📖🌿 Extensive plant library
Usage Method	The user takes a photo of the plant via the application or uploads an image from the gallery. The AI identifies the plant species and potential health issues, subsequently providing information such as watering, feeding, and care recommendations, to support sustainable plant cultivation.
Benefits Provided	This application, which enhances productivity by monitoring plant health through digital methods, • Provides rapid access to detailed information on plant identity, biological characteristics, and ideal growing conditions by analysing plant species from photos. • Prevents unnecessary irrigation and incorrect fertilisation by accurately determining plants’ water and nutrient requirements, thereby reducing resource waste and supporting circular economy principles. • Offers detailed recommendations on essential needs such as watering, light, and feeding, and facilitates regular care monitoring through personalised reminders. • Enables users to create a personal photo archive, allowing the digital tracking and analysis of plant growth over time. • Promotes more sustainable, informed, and efficient agricultural production by recommending proper care techniques and disease management strategies.
Registration Requirement	Not required for basic use. (An account can be created to access advanced features.)
Pricing	Both Free of charge and Paid versions are available. In-app purchases or subscription options are offered for advanced features and unlimited use.
Download Availability	Android, iOS Web site: https://plantapp.app/
Daily Usage Limit	The free version includes a limited number of plant identifications.
Language	Turkish and English



Plant App: Plant Identifier is an innovative guide that uses AI technology to detect plant diseases at an early stage and prevent crop losses, enhances agricultural and digital literacy skills, and contributes to circular economy principles by ensuring the efficient use of resources through informed plant care practices.

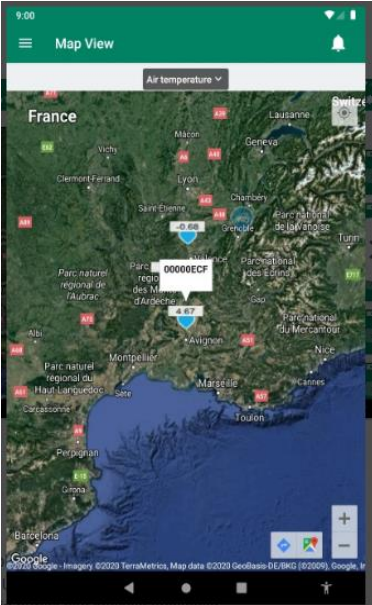
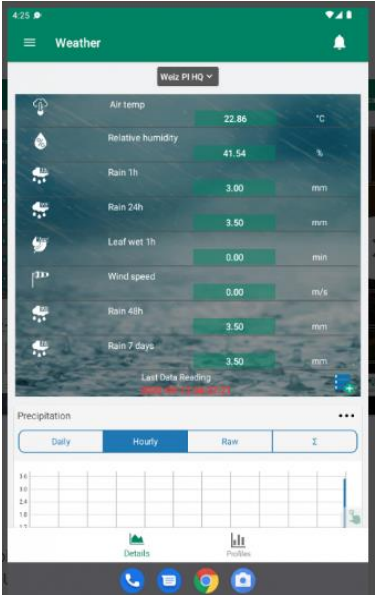
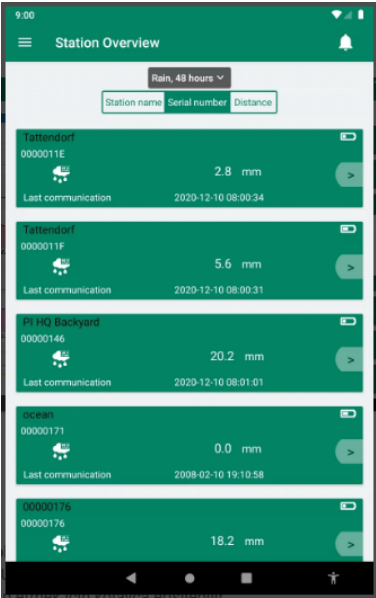
2.3. Weather Forecasting and Early Warning Systems

2.3.1. FieldClimate



IoT Smart Irrigation and Climate Monitoring Platform

Country of Origin	Austria / Pessl Instruments GmbH (Pessl Instruments Ltd.)
Category	Weather Forecasting and Early Warning Systems
Target Group	- Industrial and local farmers - Agricultural cooperatives - Fruit growers and vineyard owners - Agricultural researchers and academics - Users of smart agriculture technologies - Producers interested in irrigation and plant health management
Key Features	- Hyper-local weather forecasting and smart alert systems - Disease risk models and early warning systems - Soil moisture and water stress analysis - Map-based management and data dashboard - Crop growth monitoring through time-lapse digital imaging systems - Management and data monitoring of field sensors through integration with camera-based digital insect traps
Usage Method	After downloading the application, users can log in with their FieldClimate accounts and integrate sensors alongside field devices into the system. They can remotely manage real-time data flow, graphical analyses, and the map-based dashboard, enabling them to respond rapidly to critical situations when necessary.
Benefits Provided	This application, which provides real-time monitoring and early warning capabilities for agricultural production by integrating field sensor data with meteorological models, - Contributes to improved resource efficiency by preventing water and input waste through analyses based on soil moisture and climate data. - Supports the reduction of agricultural production losses by identifying disease risks and extreme weather events in advance. - Reduces the need for physical field visits through remote camera monitoring, thereby saving time, labour, and logistical fuel consumption while promoting circular economy principles. - Supports agricultural decision-making processes such as planting, irrigation, and spraying by integrating weather, soil, and plant health data. - Enhances agricultural and climate awareness through data-driven analyses and strengthens evidence-based decision-making processes.
Registration Requirement	Required (User registration and device pairing are required to access the system data)
Pricing	Free of charge for the basic version + Subscription options for sensors and advanced services
Download Availability	Android, iOS Web site: https://www.fieldclimate.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)



FieldClimate is a sustainable smart agriculture solution that integrates meteorological data, sensor technologies, and early warning systems, supports producers in more effectively analysing environmental conditions, strengthens data-driven decision-making processes, and contributes to the development of agricultural and digital literacy skills.

2.3.2. WetterOnline



Scan for Android



Scan for iOS

Radar-Supported Real-Time Weather Data for Agricultural and Daily Use

Country of Origin	Germany / WetterOnline Meteorologische Dienstleistungen GmbH (WetterOnline Meteorological Services Ltd.)
Category	Weather Forecasting and Early Warning Systems
Target Group	🚒 Farmers and agricultural producers 👥 Agricultural cooperatives and local producer networks 🌾 Agricultural engineers and technical personnel 👤 General users ⬆️ Disadvantaged communities living in mountainous or rural areas
Key Features	🕒 Minute-by-minute weather monitoring and 14-day forecasts 🌦️ WeatherRadar (for precipitation, wind, sunlight, clouds, etc.) 📢 ! Meteorologist-supported early warning notifications ☀️🌫️ UV index, air quality, and pollen data 📹📷 Live cameras and user reports 📍📶 Real-time weather tracking and long-term forecasts based on location and route
Usage Method	After downloading the application, users can easily access real-time weather data, live radar visualisations, and long-term forecast graphs through GPS-based automatic location detection or manual location selection.
Benefits Provided	This application, which is developed on the basis of official meteorological data sources and offers a real-time alert system, - Contributes to the prevention of input waste by enabling timely agricultural operations such as spraying, fertilisation, and irrigation through minute-by-minute weather and precipitation monitoring. - Reduces risks related to extreme weather events through an early warning system, thereby helping to prevent agricultural production losses. - Enables a better understanding of weather phenomena and supports effective field planning through map- and route-based visualisation. - Supports both agricultural decision-making processes and users’ digital data literacy skills through integrated real-time and environmental data. - Contributes to the safe execution of agricultural and logistical operations by providing up-to-date weather information on the move, thereby enabling fuel and time savings whilst promoting circular economy principles.
Registration Requirement	Not required. Optional for personalised widgets and advertisement management.
Pricing	Free of charge (ad-supported) + in-app purchase option for ad-free use
Download Availability	Android, iOS Web site: https://www.wetteronline.de/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)



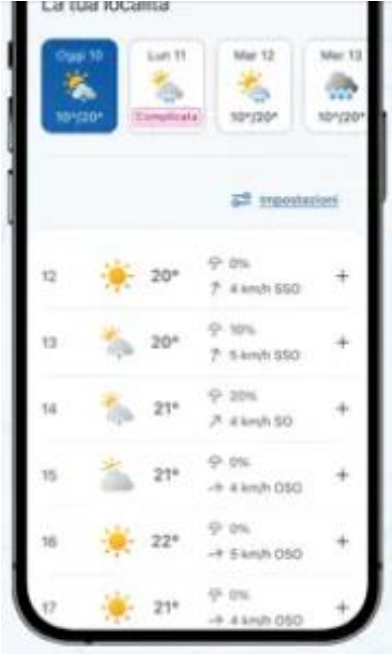
WetterOnline is a comprehensive weather platform that uses advanced radar technology and real-time data streams to make weather events more understandable, thereby supporting users in strengthening agricultural decision-making processes and improving their digital literacy skills.

2.3.3. 3BMeteo



Agrometeorological Data and Radar-Supported Weather Forecasting

Country of Origin	Italy / 3BMeteo S.r.l. (3BMeteo Ltd.)
Category	Weather Forecasting and Early Warning Systems
Target Group	👨‍🌾 Farmers and agricultural producers 👥 Agricultural cooperatives 🔧 Agricultural engineers and consultants 👤 General users ⬆️ Disadvantaged communities living in mountainous or rural areas
Key Features	📍🔥 Location-based real-time weather forecasts and alerts 🌡️🌬️ Temperature, humidity, wind, and sea condition data ⚡👁️ Real-time lightning detection and tracking 📖📰 Expert and editorial content 📷🌐 Live data and community contributions 📡⚡ Real-time weather updates and early warnings based on predictive radar and satellite technology
Usage Method	After downloading the application, users can access real-time and short-term weather forecasts, radar and satellite imagery, early warnings, and widget support via GPS-based or manual location entry, whilst following regional and community-based content.
Benefits Provided	This application, which is developed to optimise agricultural activities by providing real-time and precise weather forecasts, ^{European Union} • Delivers highly accurate short-term forecasts through nowcasting technology. • Anticipates events such as precipitation, hail, and storms via radar- and satellite-supported systems, helping to reduce food waste and crop loss risks. • Optimises irrigation, spraying, and harvesting operations through hourly and detailed forecasts, thereby preventing water and chemical input waste while supporting resource efficiency. • Enhances users’ meteorological awareness and agricultural literacy through weather news, analyses, and community contributions. • Enables farmers to visually share weather conditions in their regions, creating a regional knowledge network. • Contributes to preventing fertilisers and pesticides from being washed into groundwater and damaging ecosystems through predictive radar data. • Minimises the risk of incorrect agricultural practices by combining automated algorithms with data interpreted by certified expert meteorologists.
Registration Requirement	Not required. Creating an account is recommended for favourite locations and personalised notifications.
Pricing	Free of charge (ad-supported basic version) + In-app purchases
Download Availability	Android, iOS Web site: https://www.3bmeteo.com/servizi/app
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including widely spoken European languages, primarily Italian and English)



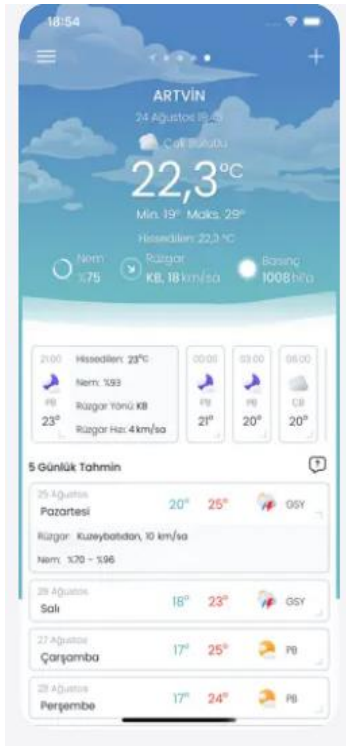
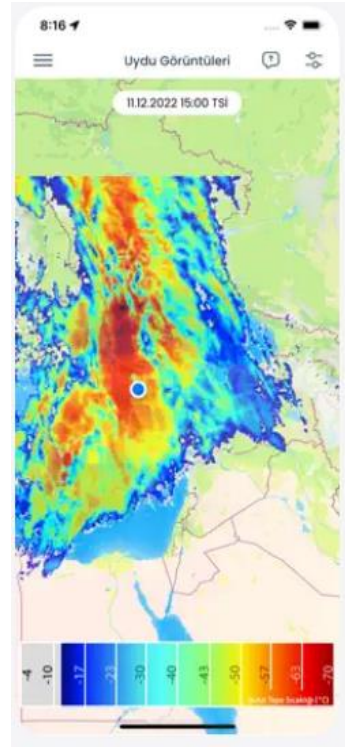
3BMeteo is a comprehensive meteorology platform that enhances short-term weather forecasts using radar and nowcasting technologies, supports agricultural risk management, and enables users to make more informed decisions by improving their agricultural and digital literacy skills.

2.3.4. Meteoroloji Hava Durumu



Meteorological Observation, Forecasting, and Early Warning Platform

Country of Origin	Türkiye / Meteoroloji Genel Müdürlüğü (Turkish State Meteorological Service)
Category	Weather Forecasting and Early Warning Systems
Target Group	👨‍🌾 Farmers and agricultural producers 👥 Agricultural cooperatives 🔧 Agricultural engineers and consultants 👤 General users ⬆️ Disadvantaged communities living in mountainous or rural areas
Key Features	🌡️🌀 Real-time weather conditions (temperature, pressure, humidity, wind, etc.) 🕒📅 Hourly and 5–7 day forecasts 📡⚡ Radar, satellite, and lightning tracking imagery 🌅🌇 Sunrise and sunset times 🚨⚡ Meteorological early warning and notification systems 🔧📊 Agricultural weather forecasting services 📱📍 Widget support and location-based tracking features 🗺️🌐 Map views (satellite, radar, sea surface temperature, snow depth, etc.)
Usage Method	After downloading the application, users can access real-time weather conditions, hourly forecasts, and long-term meteorological data via GPS-based location access or by selecting a province or district.
Benefits Provided	This application, which provides reliable meteorological information for agricultural activities and daily life, - Supports crisis management by providing access to official emergency notifications during disasters and hazardous weather conditions. - Enables users to track weather developments in real time and make rapid, informed decisions by visualising precipitation and weather events through radar and satellite imagery. - Reduces agricultural risks and prevents crop losses through targeted warnings for frost, storms, and extreme weather events. - Optimises the timing of agricultural operations such as irrigation and spraying through hourly forecasts, thereby preventing water, energy, and chemical input waste while maximising resource efficiency. - Supports product planning and agricultural risk management by providing access to essential weather forecast data usable in farming activities, alongside general meteorological services.
Registration Requirement	Not required. Location-based permissions are requested optionally.
Pricing	Free of charge
Download Availability	Android, iOS Web site: https://www.mgm.gov.tr/
Daily Usage Limit	Not specified
Language	Turkish Although English language support appears in the App Store listing, the in-app interface and meteorological data are provided exclusively in Turkish



Meteoroloji Hava Durumu is a public-focused meteorology platform that provides reliable weather, radar, and early warning services based on official meteorological observation and forecast data, supporting the planning of agricultural activities while contributing to the development of users’ meteorological awareness, risk management, and digital literacy skills.

2.3.5. Alerte Meteo Romania



Scan for Android





Scan for iOS

Real-Time Meteorological Alerts for Agricultural Risk Management

	Country of Origin Romania / Nicolae Lorin-Patrick Persoana Fizică Autorizată (Codingfy) (Nicolae Lorin-Patrick Sole Proprietorship / Codingfy)
	Category Weather Forecasting and Early Warning Systems
	Target Group 👨‍🌾 Farmers and agricultural producers 👥 Agricultural cooperatives 🌾 Agricultural engineers and consultants 👤 General users ⬆️ Disadvantaged communities living in mountainous or rural areas
	Key Features 📍🔊 District-based real-time weather forecasts and early warnings 🔔✉️ Instant mobile notifications and email alerts ⬆️🌳 Specialised data for mountainous and agriculturally critical regions 🗺️➡️ Map-based alerting and risk monitoring 📡🌩️ Official real-time forecast data from MeteoRomania and EUMETNET sources
	Usage Method After downloading the application, users can track weather alerts via manual location selection or automatic location detection. They can also select a preferred district to activate real-time notifications and meteorological risk alerts.
	Benefits Provided This application, which is developed on the basis of official meteorological data sources and offers a real-time warning system, - Enables precise monitoring of the local impacts of real-time weather events through nowcasting and radar data. - Supports faster decision-making and improves crisis management capacity through real-time alerts, thereby enhancing time management. - Reduces crop losses by strengthening risk management in planting, spraying, and harvesting processes, while supporting efficient resource use and contributing to the circular economy. - Provides regional meteorological awareness and planning capabilities through a map-based system. - Contributes to the safe management of agricultural and logistical operations under extreme weather conditions, while enabling energy and fuel savings. - Supports users’ climate and digital map literacy skills through the provision of reliable meteorological data.
	Registration Requirement Not required. Subscription is recommended for multi-district tracking and advanced features (e.g., email alerts).
	Pricing Free of charge (basic version) + Paid (PRO version)
	Download Availability Android, iOS Web site: https://codingfy.com/
	Daily Usage Limit Not specified
	Language Romanian and English Although the application interface supports English, official meteorological warning messages and regional names sourced from MeteoRomania are provided in the local language (Romanian).



Alerte Meteo Romania is a meteorological alert platform that supports agricultural risk management, provides early warning capabilities, and contributes to more sustainable resource use by enhancing users’ digital and agricultural awareness.

2.4. Remote Sensing and Satellite-Based Agriculture

2.4.1. OneSoil Scouting: Farming Tool

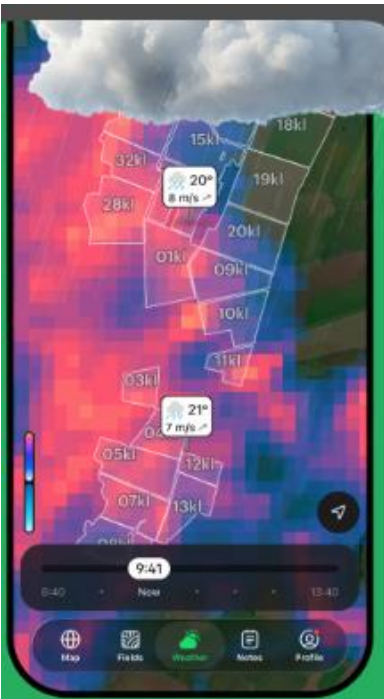
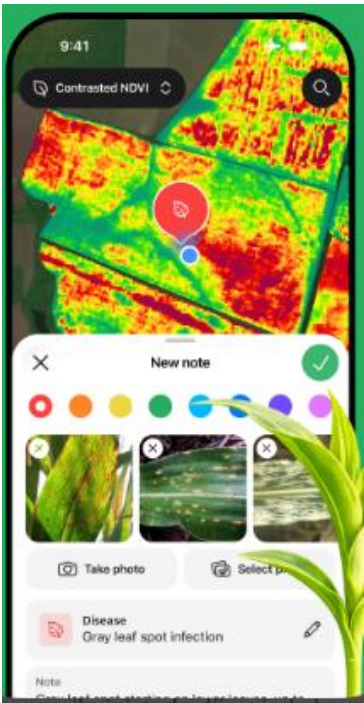


Scan for Android



Scan for iOS

Satellite-Supported Field Monitoring and Precision Agriculture Management



Country of Origin	Poland / OneSoil Sp Z O O (OneSoil Ltd.)
Category	Remote Sensing and Satellite-Based Agriculture
Target Group	👨 Farmers 🚜 Agricultural enterprises and machinery operators 👨 Agricultural engineers and consultants 📅 Agricultural professionals involved in crop rotation planning and field monitoring
Key Features	🌱 Crop health (NDVI) analysis via satellite imagery 📷 Offline field notes and photo capture 🕒 Real-time and historical season data for field analysis 🔄 Crop rotation planning and crop sequencing 🔍 Detection of problematic areas and prioritised field scouting 🗣️ Weather, precipitation, and crop protection timing recommendations 📄 Prescription maps for variable rate application (VRA) (web-based advanced subscription) 🌐 Machinery data and agricultural calculation tools (web version)
Usage Method	After downloading the application, users can add their fields to the system and monitor crop development through satellite data, track weather information, and create field notes. They can edit automatically detected field boundaries and organise fields on a seasonal basis. More detailed analysis and planning can be carried out via the web platform.
Benefits Provided	This application, which contributes to more efficient management of agricultural production processes through satellite-based analyses, - Supports the early detection of problematic areas by monitoring crop development through NDVI data and helps prevent the excessive use of fertilisers and pesticides through targeted interventions. - Supports more accurate and sustainable planning of agricultural activities through weather, precipitation, and crop rotation planning. - Strengthens the traceability of the production process and data sharing between teams through field notes and visual records. - Supports a data-driven approach in seasonal planning and production decisions through historical data analysis. - Promotes digital inclusion by facilitating access to precision agriculture technologies for small-scale producers through its open-access basic version. - Contributes to the optimisation of input use through variable rate fertilisation and seeding maps.
Registration Requirement	Required
Pricing	Free of charge for the basic version + Subscription is required for advanced monitoring and precision agriculture tools
Download Availability	Android, iOS Web site: https://onesoil.ai/en
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, and Turkish)

OneSoil Scouting: Farming Tool is a digital agriculture solution that supports the monitoring of production processes through satellite-based agricultural analyses, contributes to the development of agricultural and digital literacy, and promotes a circular economy approach by optimising resource use through data-driven decision-making processes.

2.4.2. Cropwise Operations



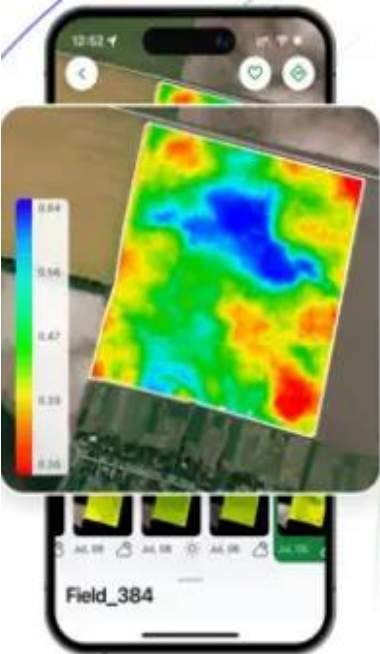
Scan for Android





Scan for iOS

Data-Driven Remote Agricultural Monitoring and Analysis Platform

 	Country of Origin	Switzerland / Syngenta Agro AG (Syngenta Agro Inc.)
	Category	Remote Sensing and Satellite-Based Agriculture
	Target Group	👨‍🌾 Farmers and agricultural producers 🏢 Agricultural enterprises and agribusinesses 🔍 Precision agriculture and field management specialists 👨‍🔧 Agricultural engineers and consultants
	Key Features	📡 High-resolution and real-time satellite monitoring 🌱 Crop development analysis and early risk detection 📍 Telematics and GPS-supported operations management 🗺️ Variable Rate Application (VRA) prescription maps 📷 Offline field scouting and photo-based reporting 🌤️ Meteorological monitoring and yield forecasting 🔍 Detection of problematic areas and prioritised field scouting
	Usage Method	Users can register their agricultural fields in the system to monitor production processes using satellite imagery, weather data, and field analyses. They can record field observations with photos and notes in order to execute data-driven agricultural planning. Automatically detected field boundaries can be edited, and fields can be organised on a seasonal basis.
	Benefits Provided	This application, which supports the monitoring and evaluation of agricultural production processes through satellite imagery and environmental data analysis, - Enables early intervention by monitoring field and crop development through satellite imagery and field analyses, thereby optimising resource use and reducing waste. - Identifies problematic areas to optimise the use of water, fertilisers, and pesticides, thereby reducing input costs and contributing to the circular economy by preventing chemical pollution. - Supports the safer planning of production processes through weather data and risk analysis. - Increases traceability and efficiency in agricultural operations through GPS and operation tracking. - Supports production planning through the analysis of historical data and yield forecasting. - Supports continuous data collection and digital documentation processes through offline data recording and digital reporting. - Strengthens data-driven decision-making processes and contributes to the development of agricultural and digital literacy.
	Registration Requirement	Required (Corporate activation is required)
	Pricing	Paid (Corporate subscription required)
	Download Availability	Android, iOS Web site: https://operations.cropwise.com/
	Daily Usage Limit	Not specified
	Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)

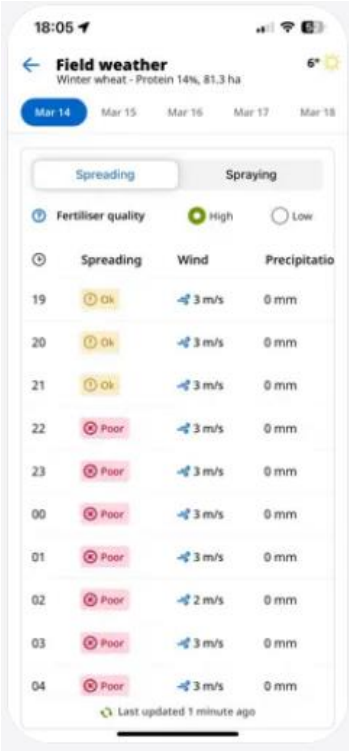
Cropwise Operations is an innovative smart agriculture platform that supports more informed management of production processes through satellite imagery, field analyses, and data-driven agricultural monitoring tools, optimises resource use, and contributes to the development of agricultural and digital literacy skills.

2.4.3. Atfarm



Satellite-Supported Precision Fertilisation Platform

Country of Origin	Norway / Yara International ASA (Yara International PLC)
Category	Remote Sensing and Satellite-Based Agriculture
Target Group	🚜 Farmers and agricultural producers 🏢 Agricultural enterprises and companies 🌾 Agricultural engineers and consultants 💎 Producers engaged in precision fertilisation 🌍 Sustainable food producers 📡 Professionals using digital agriculture technologies
Key Features	🗺️🌾 Creating variable rate fertilisation (VRA) maps 📅🗺️ Application timing support using weather data 📡🌿 Wireless data transfer from portable chlorophyll and nitrogen measurement devices 🌱📡 High-resolution crop and field health monitoring using NDVI 📷🌿 Plant nutrient status detection via mobile image analysis without additional hardware
Usage Method	Users log in with their Atfarm accounts and define their fields on the map. Crop development and nitrogen requirements are monitored through satellite data and image analysis, fertilisation plans are created, and field operations are managed via GPS. Seasonal field organisation can also be carried out through map-based tools.
Benefits Provided	This application, which combines satellite imagery and sensor-supported analyses, • Enables early intervention and precision agriculture practices by analysing crop diversity and growth variations in the field through satellite data. • Increases resource efficiency by determining crop nitrogen requirements on a zonal basis, ensuring that fertilisation is applied only where needed and in the correct amounts. • Reduces excessive fertiliser use, thereby lowering nitrogen leaching into groundwater and minimising production costs, while contributing to the ecosystem protection principles of the circular economy. • Supports digital inclusion by enabling mobile image analysis technology to assess crop nitrogen and nutrient status via smartphone cameras. • Determines optimal timing for fertilisation and spraying by considering weather data such as wind, humidity, and soil temperature, thereby preventing application errors. • Enhances users’ agricultural and digital literacy levels by developing digital map reading and data-driven agricultural planning skills.
Registration Requirement	Required
Pricing	Free of charge for trial + Paid advanced professional packages
Download Availability	Android, iOS Web site: https://at.farm/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)



Atfarm is a digital management tool that combines satellite-based monitoring and image analysis technologies to minimise input waste in agricultural production, protect soil health, and strengthen users’ digital farming skills with a focus on sustainability.

2.4.4. Orbit Uzaktan Tarla Takibi



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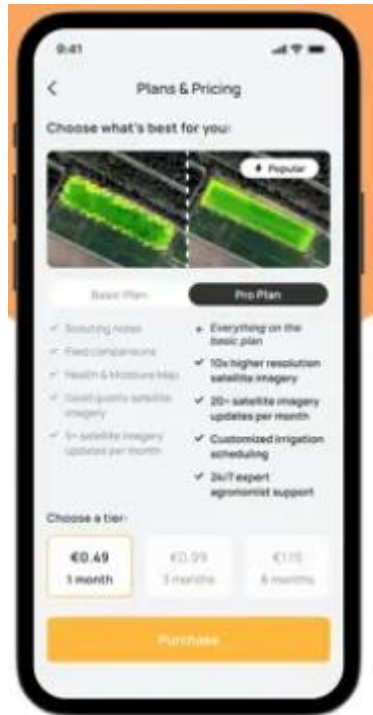




Scan for iOS

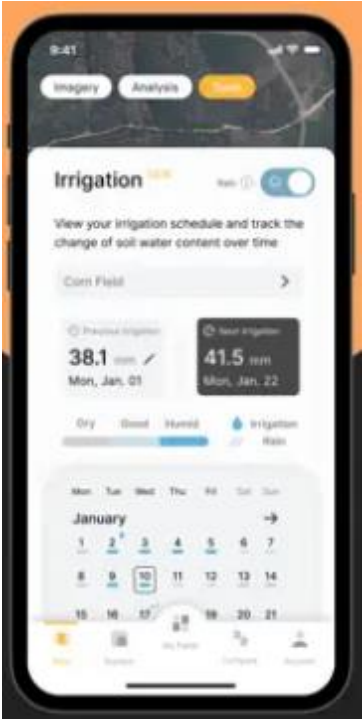
Remote Monitoring and Analysis of Agricultural Production Using Satellite Data

Country of Origin	Türkiye / Doktor Teknoloji A.Ş. (Doktar Technology Inc.)
Category	Remote Sensing and Satellite-Based Agriculture
Target Group	👨‍🌾 Farmers and agricultural producers 🔧 Agricultural engineers and consultants 🏢 Agricultural enterprises and professional agriculture stakeholders (trading companies, consultancies, etc.)
Key Features	📡 High-resolution satellite imagery 🌱 Crop health and growth maps ⚠️ Analysis and alerts for problematic field areas 💧 Irrigation and water stress maps 📊 Variable Rate Application (VRA) fertilisation maps 📷 Field notes with photo and annotation capabilities 📈 Yield potential comparisons ⚠️ Early detection of disease and growth delay risks ⚡ Weather monitoring, live rainfall and storm tracking, early warnings
Usage Method	After downloading the application, users can register their fields in the system to monitor crop development through satellite data and analyses, follow field-specific meteorological risk alerts, take field notes, and execute data-driven production planning.
Benefits Provided	This application, which provides satellite-supported field monitoring and analysis within the scope of smart agriculture applications, - Enables remote and regular monitoring of field and crop health, allowing for early intervention. - Supports more efficient use of water, fertilisers, and other inputs, contributing to reduced costs and improved resource efficiency. - Enables more accurate planning of resource use by visualising different growth zones within the field. - Supports the early detection of risks such as disease and growth delays, thereby helping to reduce crop losses. - Provides early warnings regarding weather events and environmental risks, thereby supporting the safer management of production processes. - Increases the traceability of the production process through field notes and observation records. - Supports data-driven decision-making processes and contributes to improved production efficiency. - Analyses the actual water needs of crops through water stress maps, preventing over-irrigation and helping to preserve freshwater resources, thereby supporting the circular economy.
Registration Requirement	Required
Pricing	Paid after the trial period
Download Availability	Android, iOS Web site: https://www.doktar.com
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)









Orbit Uzaktan Tarla Takibi is a digital agriculture solution that enables the monitoring and management of production processes through satellite data and field analyses, contributes to the development of agricultural and digital literacy, and supports a circular economy approach by optimising resource use.

2.4.5. Tarlam Cepte



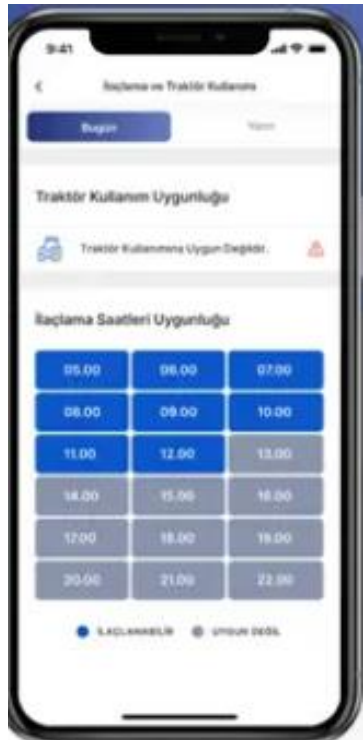
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Digital Monitoring and Data-Driven Management of Agricultural Production Processes

Country of Origin	Türkiye / Türk Traktör ve Ziraat Makineler A.Ş. (Turkish Tractor and Agricultural Machinery Inc.)
Category	Remote Sensing and Satellite-Based Agriculture
Target Group	👨‍🌾 Farmers and agricultural producers 🏢 Owners of agricultural enterprises 🌿 Agricultural consultants and agronomists
Key Features	📍 Land and crop information management 🌱 Satellite-supported crop health monitoring 📅 Production planning and smart reminders 📊 Agricultural data analysis ☁️ Meteorological monitoring and spraying alerts 💰 Current input prices and market tracking 📢 Official announcements, subsidy information, and up-to-date agricultural news
Usage Method	After downloading the application, users can create an account to register data related to their agricultural lands and production processes. They can then monitor, plan, and analyse their production activities using this data.
Benefits Provided	This application, which supports the digital management of agricultural production processes, - Enables users to systematically record and track data related to their land, crops, and production activities, thereby enhancing traceability. - Provides the ability to create production calendars and monitor activity history, supporting planned and organised production. - Offers reminders for fertilisation, pesticide application, and maintenance activities, facilitating timely and consistent interventions while contributing to the circular economy. - Analyses agricultural data to support productivity and cost assessments, making decision-making processes data-driven. - Provides access to up-to-date information such as fertiliser, fuel, and pesticide prices, along with planting recommendations and spraying alerts, supporting more informed management of production activities. - Strengthens agricultural monitoring processes through satellite-supported crop health analyses. - Guides users to agricultural support and subsidy programmes, improving access to institutional information. - Offers access to weather and climate data, contributing to the environmentally appropriate planning of production activities.
Registration Requirement	Not required for basic information services; however, access to advanced features requires creating an account.
Pricing	Free of charge (basic usage) + advanced features available as in-app purchases
Download Availability	Android, iOS Web site: https://www.tarlamcepte.com
Daily Usage Limit	Not specified
Language	Turkish (mainly) and English



Tarlam Cepte is a comprehensive digital farming solution that enables producers to plan and manage agricultural activities based on data, supports agricultural and digital literacy, and optimises resource use to strengthen a circular economy approach.

2.5. Agricultural Circular Economy, Input, Emission and Waste Management

2.5.1. SatAgro



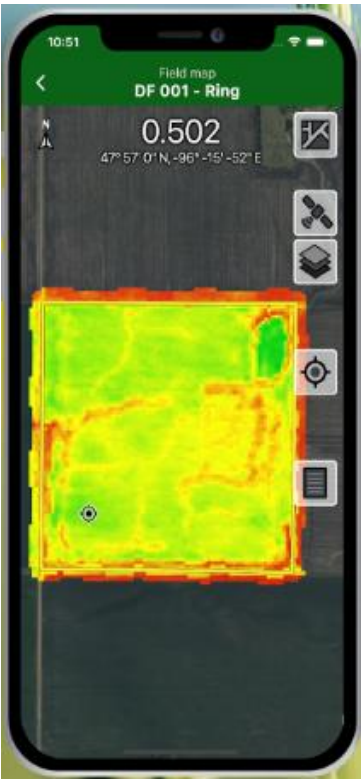
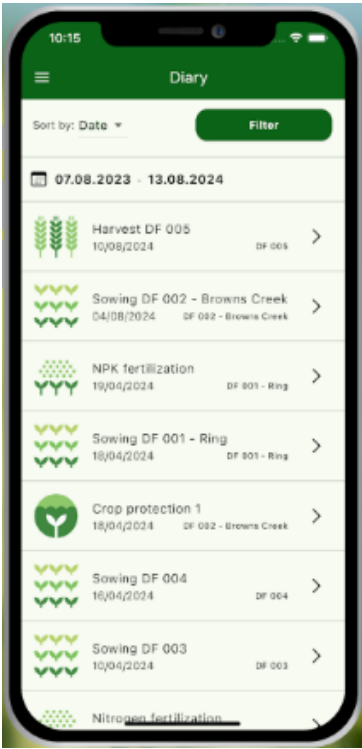
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Data-Driven Input Management and Sustainable Agriculture Solutions

Country of Origin	Poland / SATAGRO SP Z O O (SatAgro Ltd.)
Category	Agricultural Circular Economy, Input, Emission and Waste Management
Target Group	- Farmers - Agricultural enterprises - Precision agriculture practitioners - Agricultural engineers and agronomists - Producers implementing sustainable and regenerative agricultural practices
Key Features	- Monitoring field conditions and crop health through satellite data - Management zone mapping and soil sampling planning - Fertilisation, sowing, and crop protection applications through VRA maps - Smart alerts for weather conditions and crop health monitoring - Yield analysis based on historical data - Prescription/data transfer compatible with agricultural machinery and mobile field access
Usage Method	Once the application is downloaded, users can utilise the mobile app for real-time field location tracking, viewing satellite maps, and data analysis, following the creation of an account and field profiles on the web platform.
Benefits Provided	This application, which places data-driven analysis at the core of agricultural production processes, - Enables accurate dosage and precision agriculture practices by analysing in-field variability through satellite data, thereby contributing to efficient production processes and preventing resource waste. - Optimises input use, reducing fertiliser, pesticide, and water costs while minimising environmental impacts. - Supports more informed and error-free decision-making processes in agricultural production through prescription maps and data-driven analyses. - Strengthens early intervention and risk management through automated weather and crop health alerts, contributing to the prevention of production losses. - Enhances yield forecasting and agricultural planning through historical data analysis, thereby enabling more efficient resource management. - Contributes to the reduction of waste generation through the efficient use of resources, strengthens sustainable production cycles, and supports the development of digital agricultural literacy.
Registration Requirement	Required
Pricing	Free of charge (Starter version- limited to one field) + Paid (Advanced precision agriculture and management packages)
Download Availability	Android, iOS Web site: https://satagro.net/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)



SatAgro is an application that supports the more efficient use of agricultural inputs, optimises resource management, and promotes data-driven production processes, thereby contributing to the development of agricultural and digital literacy while strengthening sustainable production approaches.

2.5.2. Farmable: Farm Management

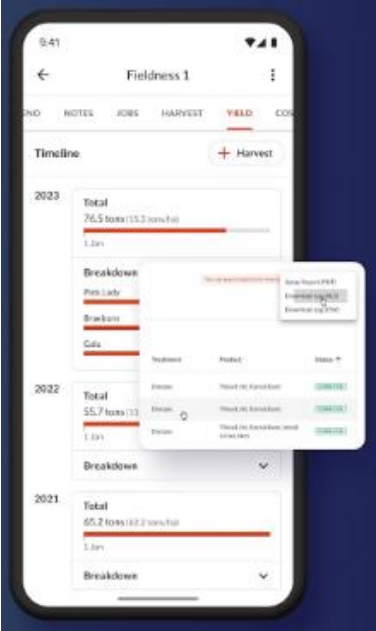
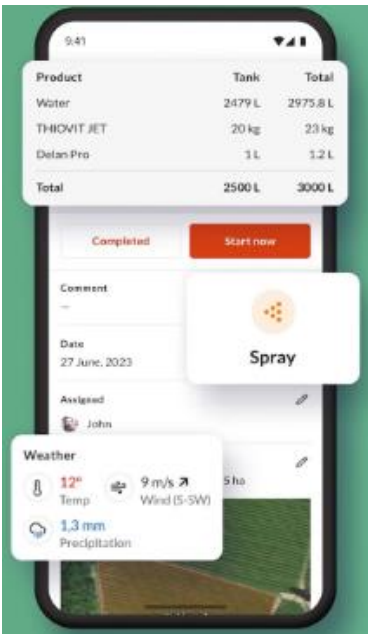


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Digital Monitoring and Input Management in Farm and Garden Management



Country of Origin	Norway / Farmable AS (Farmable Ltd.)
Category	Agricultural Circular Economy, Input, Emission and Waste Management
Target Group	👨‍🌾 Farmers 🍇 Fruit growers, vineyard managers, and garden owners 🏢 Agricultural enterprises 👨‍🔬 Producers using digital agriculture applications 👨‍🔧 Agricultural engineers and consultants 🌍 Producers implementing sustainable and traceable agricultural practices
Key Features	📍 Field and site management 📅 Task and operation management 🧴 Smart tank mixing and fertilisation planning 📝 Note-taking and field observations 📊 Harvest records, yield monitoring, and reporting 🔄 Intra-team data sharing and synchronisation
Usage Method	Once the application is downloaded, production areas are mapped digitally using GPS. Daily tasks such as crop protection, fertilisation, and harvesting are planned through the mobile app and assigned to field teams. Detailed analyses, report exports, and advanced reporting and management processes are conducted in a synchronised manner via both the mobile application and the web version of the platform.
Benefits Provided	This application, which supports the digital management of agricultural production processes, • Minimises chemical waste and resource consumption by ensuring the precise use of inputs such as water, pesticides, and fertilisers through a tank mix calculator that delivers exact application rates. • Reduces the risk of chemical residues through accurate input management and precision dosing, while supporting the protection of soil and water resources in line with circular economy principles. • Saves time in operational processes by eliminating paper-based logs and complex spreadsheets, while strengthening digital agricultural literacy through practical applications. • Contributes to compliance with international certification and audit processes by generating automatic spray reports in accordance with global standards. • Enhances data-driven and sustainable agricultural planning capacity for the future by recording annual harvest and yield data. • Optimises internal farm communication through real-time, location-based note sharing features, thereby preventing managerial errors.
Registration Requirement	Required
Pricing	Free of charge (basic usage) + Paid subscriptions (advanced packages)
Download Availability	Android, iOS Web site: https://farmable.tech/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)

Farmable: Farm Management is a dynamic management application designed to optimise crop protection and fertilisation processes, particularly in orchards and vineyards. By utilising a smart tank calculator, it helps reduce input waste and environmental impacts, while data-driven harvest analysis supports agricultural sustainability and the development of digital farm literacy.

2.5.3. QS-Klimaplatattform



Scan to access directly via mobile browsers



Scan to access directly via mobile browsers

Carbon Footprint Analysis and Emissions Management in Agricultural Production

Country of Origin	Germany / QS Qualität und Sicherheit GmbH (QS Quality and Safety Ltd.)
Category	Agricultural Circular Economy, Input, Emission and Waste Management
Target Group	• 🐷 Pig farming enterprises • 🏠 Slaughterhouses, meat processing facilities, and value chain stakeholders • ☹️ Carbon management and sustainability specialists • 🌱 Farmers aiming for sustainable and low-emission production • 🌿 Agricultural consultants, cooperatives, banks, and insurance institutions
Key Features	• 🌐📊 Standardised CO₂ and carbon footprint analysis • 🐷🏠 Livestock-focused climate performance assessment • ⚙️🔒 Automated data transfer and calculation integration • 📈☹️ Emissions reduction and optimisation analysis • 📥🔒 Guided data entry and secure data management • 📄🤝 Sustainability reporting and sector integration
Usage Method	It is a cloud-based web software fully compatible with mobile devices and tablets. Users log in to the system via a browser to record production, energy, and feed data for their enterprise. The platform automatically analyses this data and in order to provide farm-specific climate performance and emissions assessment reports.
Benefits Provided	This application, which specifically supports climate-focused digital transformation in the livestock sector, • Analyses the carbon footprint of livestock enterprises, promoting emission reduction, improved resource efficiency, and the development of sustainable production processes aligned with circular economy principles. • Enables farms to measure climate performance and identify areas for improvement through farm-specific CO₂ assessments and benchmarking against industry standards. • Contributes to the development of agricultural, environmental, and digital literacy skills through user-friendly digital data management. • Supports certification, sustainable supply chain practices, and green financing processes through secure data sharing and transparent reporting features.
Registration Requirement	Required
Pricing	Free of charge (for QS system partners and producers included in the quality assurance network)
Download Availability	Web-based platform (mobile and tablet compatible) https://q-s.de/
Daily Usage Limit	Not specified
Language	German and English



QS-Klimaplatattform is an integrated climate management platform that enables livestock enterprises to assess their carbon footprint through standardised digital analyses. It supports data-driven improvement processes aimed at reducing CO₂ emissions, and strengthens circular economy approaches, environmental awareness, and digital agricultural literacy through sustainable production practices.

2.5.4. Irristrat Mobile



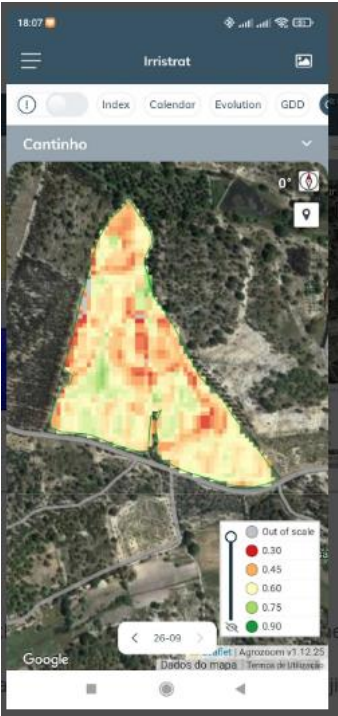
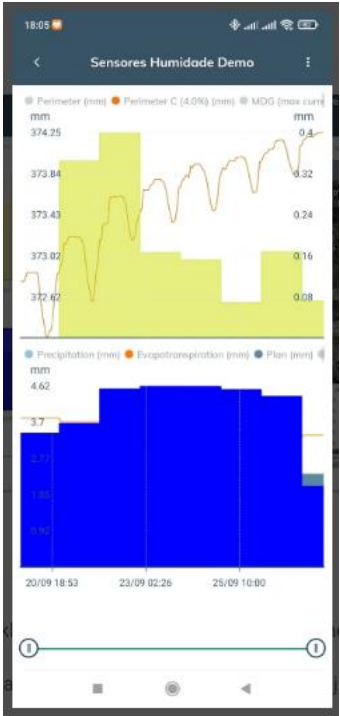
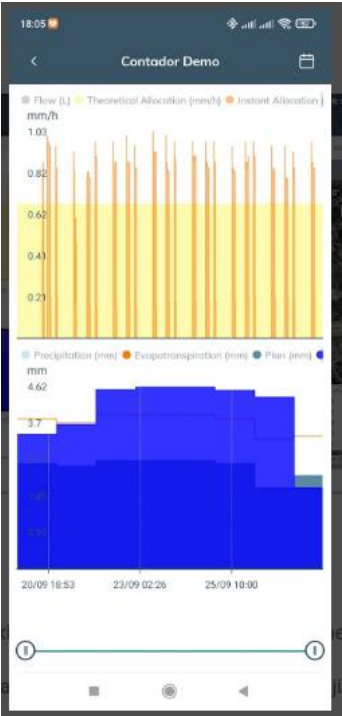
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Data-Driven Smart Irrigation and Precision Resource Management

Country of Origin	Portugal / Hidrosoph, Unipessoal, LDA (Hidrosoph Single-Member Ltd.)
Category	Agricultural Circular Economy, Input, Emission and Waste Management
Target Group	👨‍🌾 Farmers managing irrigation systems, field and orchard producers 👥 Agricultural enterprises, cooperatives, and water resource managers 🔧 Producers using data-driven and precision agriculture practices 🌿 Agricultural engineers, irrigation consultants, and water management specialists 🍇 Fruit orchards, vineyards, and agricultural enterprises with high water demand
Key Features	📍🔍 Geographic reference-based irrigation planning and field monitoring 🕒⌚ Real-time smart irrigation decision support system 🌱💧 Plant water requirement and soil moisture analysis 📱📁 Mobile data entry, field observations, and task management 🌿💧 Irrigation efficiency and water management analysis 📡📊 Irrigation modelling based on meteorological and field data
Usage Method	After the application is downloaded, users create irrigation plans by entering meteorological and irrigation data related to their agricultural fields into the system or by monitoring integrated sensor data. The system analyses plant water requirements using geospatial data and meteorological modelling, providing recommendations for optimal irrigation timing. The results can be monitored via mobile devices, enabling the optimisation of irrigation management.
Benefits Provided	This application, which digitalises water management-one of the most critical issues in the global climate crisis, • Reduces water waste by ensuring that irrigation is carried out at the right time and in the required amount for plants, contributing to the circular and sustainable use of water resources. • Prevents over-irrigation, thereby reducing soil erosion, fertiliser leaching, and groundwater pollution, while strengthening input and waste management practices. • Enhances data-driven decision-making and climate adaptation capacity in response to drought risks through meteorological modelling and early warning systems. • Protects plant health, prevents yield losses, and reduces energy consumption by minimising irrigation errors, thereby contributing to lower carbon emissions. • Supports the development of agricultural and digital literacy by simplifying complex water, soil, and meteorological data into usable insights.
Registration Requirement	Required (Requires corporate platform membership or a demo request)
Pricing	Paid (Free of charge demo access and request options are available for producers via the website)
Download Availability	Android, iOS Web site: https://irristrat.com/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including major European languages, primarily English and Portuguese)



Irristrat Mobile is a dynamic resource management application that processes meteorological data and field sensor inputs to generate precision irrigation plans. By preventing water waste and optimising agricultural inputs, it supports the sustainable management of water resources within a circular economy framework and contributes to the development of digital environmental literacy.

2.5.5. CompostUMH



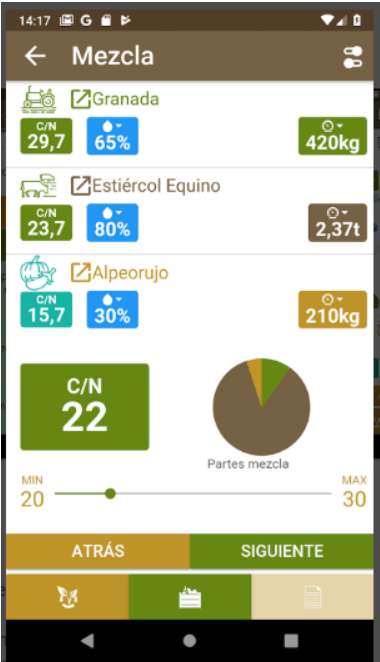
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iOS users,
Scan to Access Web platform

Composting of Agricultural Organic Waste and Circular Resource Management

 	Country of Origin	Spain / Universidad Miguel Hernandez De Elche (Miguel Hernández University of Elche)
	Category	Agricultural Circular Economy, Input, Emission and Waste Management
	Target Group	👨‍🌾 Farmers and agricultural producers 🏠 Small-scale garden owners 🏢 Agricultural enterprises producing organic and animal/plant-based waste 🌱 Producers adopting circular economy and zero-waste practices 🌿 Agricultural consultants, agronomists, and sustainability specialists 👥 Agricultural cooperatives, rural development organisations, and educational institutions
	Key Features	📊 Data modelling and planning for the composting process 📖 Agro-compost training and guidance materials 📖 Guidance through a local waste and raw material database 🌱 Support for sustainable waste management and collaboration 🌱 Decision support for converting organic waste into compost 🌱 Optimisation of moisture balance, Carbon/Nitrogen (C/N) ratio, and compost formulation
	Usage Method	After the application is downloaded or accessed via the web interface, users plan the compost production process by entering types of organic waste generated from agricultural production into the system. The system provides optimal mixture and process recommendations through a local waste and raw material database. Users can optimise their production processes using compost calculation tools and access training content in order to master agro-composting practices.
	Benefits Provided	This application, which digitalises the recovery of agricultural and urban waste, - Strengthens the circular economy approach by promoting the reuse of organic waste through the conversion of agricultural residues into compost. - Improves soil health by reducing dependence on chemical fertilisers, lowers input costs, and supports sustainable production models. - Enhances efficiency in waste management by digitalising composting processes, enabling resource savings and optimisation in production workflows. - Contributes to the development of agricultural, environmental, and digital literacy skills by simplifying scientific and technical composting knowledge. - Reduces environmental impacts by encouraging the use of local resources and supports sustainable rural development and circular production systems.
	Registration Requirement	Required (May vary depending on platform features)
	Pricing	Free of charge
	Download Availability	Android + Web-based usage Web site: https://www.umh.es/
	Daily Usage Limit	Not specified
	Language	Multilingual support (depending on the platform, including major European languages, primarily English and Portuguese)

CompostUMH is an innovative academic application that supports the valorisation of agricultural organic waste through composting processes, promotes the use of local resources to enhance sustainable input management, and integrates circular economy principles with digital learning tools to foster the development of both agricultural and digital literacy.

2.6. Smart Agriculture and Decision Support Systems (DSS)

2.6.1. Vite.net



Scan for Android
(Horta DSS for mobile access)



Scan for iOS
(Horta DSS for mobile access)

Data Analytics and Sustainable Decision Support System for Vineyard Management



Country of Origin	Italy / Horta S.r.l. (Horta Ltd.)
Category	Smart Agriculture and Decision Support Systems (DSS)
Target Group	• Vineyard owners and wine producers • Agricultural consultants and technical experts • Agricultural cooperatives and farm managers • Enterprises implementing Integrated Pest Management (IPM) practices
Key Features	• Water stress and nutrient management • Crop protection and fertilisation management • Disease and pest alerts • Real-time agro-meteorological data analysis • Record of cultivation operations and interventions • Phenological analysis and vine management models adapted for over 100 grape varieties
Usage Method	Users log in to the system via the web platform or mobile application to register vineyard locations and vine varieties. The system processes data obtained from on-site agro-meteorological stations and field observations in order to generate scientific decision support recommendations regarding disease risks and irrigation needs. All operations can be monitored in real time through the mobile interface.
Benefits Provided	This application, which integrates viticulture with digital decision support systems in order to enhance production processes, • Enables timely interventions based on real-time agricultural and environmental data, reducing unnecessary pesticide and fertiliser use, thereby helping to protect the ecosystem. • Supports the controlled use of crop protection products, contributing to the reduction of environmental impacts. • Optimises production inputs, lowers costs, prevents resource waste, and reinforces a circular economy approach. • Transforms scientific and technical data into clear decision support, thereby enhancing the digital and technical knowledge of farmers and technicians. • Records all agricultural operations, ensuring transparency, traceability, and manageability of the production process.
Registration Requirement	Required (A corporate user account must be created)
Pricing	Paid (Annual subscription model / Demo access available upon request)
Download Availability	Android, iOS + Web-based platform Web site: https://www.horta-srl.it/en/vite-net/
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including Turkish and major European languages, primarily Italian and English)

Vite.net is an innovative digital agriculture platform that combines scientific data analytics with decision support systems in viticulture to enhance production efficiency, support environmental sustainability, and contribute to the optimisation of resource use.

2.6.3. Abaco Farmer



Smart Platform Integrating Agricultural Production, Logistics, and Data Management

	Country of Origin	Italy / Abaco S.p.A. (Abaco Inc.)
	Category	Smart Agriculture and Decision Support Systems (DSS)
	Target Group	• 🌱 Agricultural producers and entrepreneurs • 👥 Agricultural cooperatives • 🚛 Users of precision agriculture technologies • 📦 Agricultural logistics and distribution managers • 🌍 Enterprises focused on sustainable production and traceability
	Key Features	• 📶🌿 IoT sensor integration and field data monitoring • 🚜🔧 Management of agricultural machinery and production systems • 🏠📊 Digital monitoring of production and processing operations • 📦📡 Logistics and supply chain management • 📈🌱 Agricultural data analysis and decision support systems • 🌿📊 Region-based data-driven land management • 📊📉 Data analytics-based production and risk forecasting • 📦🌍 Digital tracking and reporting of the agricultural value chain
	Usage Method	After activating a corporate user account, the application is downloaded. Users integrate data related to production areas, machinery, sensors, and agricultural processes into the app. The collected data is analysed on a single platform, enabling the digital monitoring, analysis, and management of the entire agricultural value chain—from production to logistics.
	Benefits Provided	This digital application, which enables real-time data integration across the entire agricultural value chain, • Provides a holistic and integrated agricultural management system by aggregating data from IoT sensors, machinery, and production systems on a single platform. • Enhances operational efficiency by digitalising production, processing, storage, and logistics processes, enabling end-to-end supply chain management; thereby helping to reduce fuel waste and carbon footprint. • Ensures transparency and traceability by managing and recording all processes from farm to distribution in an integrated manner, contributing to the development of a sustainable and traceable agricultural ecosystem. • Strengthens agricultural decision-making processes through data analytics and predictive models, thereby reducing risks and improving planning. • Optimises resource use, reduces costs, prevents waste, and contributes to the circular economy.
	Registration Requirement	Required
	Pricing	Paid (Based on a corporate subscription and contractual model)
	Download Availability	Android, iOS+ Web-based platform Web site: https://www.abacogroup.com/
	Daily Usage Limit	Not specified
	Language	Multilingual support (depending on the platform, including major European languages, primarily Italian and English)



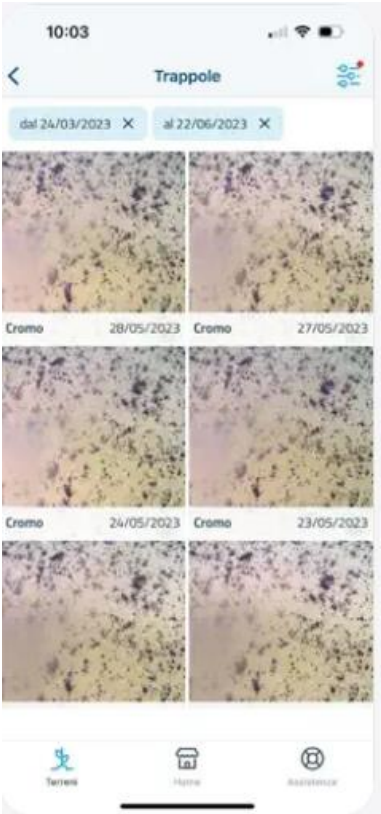


Abaco Farmer is an integrated smart agriculture platform that supports the digital monitoring and management of the entire agricultural value chain—from production to logistics—strengthens data-driven decision-making processes, enhances resource use efficiency, and contributes to the development of sustainable farming practices.

2.6.4. Elaisian



Precision Agriculture and Decision Support Platform for Olive and Perennial Crop Production



Country of Origin	Italy / Elaisian S.r.l. (Elaisian Ltd.)
Category	Smart Agriculture and Decision Support Systems (DSS)
Target Group	• 🍇 Olive, vineyard, and almond producers • 🧑 Farmers • 🌿 Agricultural consultants • 👥 Agricultural cooperatives • 🧑 Adults interested in precision agriculture technologies • 💧 Agricultural enterprises focused on irrigation and water management
Key Features	• 🌤️ Real-time meteorological station data • 💧 🌿 Sensor data (soil temperature, moisture, leaf wetness) • 🚨 🌿 Early warning notifications for diseases and pests • 🛰️ 🌿 Satellite imagery and vegetation indices • 🧑 🗣️ Expert agricultural advisory support • 📱 ! Instant messaging services and in-app notifications • 📁 🗂️ Agricultural data archive, digital record-keeping and reporting system • 📊 🌿 Algorithms for irrigation scheduling and water use optimisation
Usage Method	After downloading the application, users define their agricultural fields in the system and integrate meteorological and satellite data. The Decision Support System (DSS) analyses the collected data in order to provide users with recommendations on disease risk, irrigation management, and agronomic interventions via the application, instant messaging services, and in-app notifications.
Benefits Provided	This application, which integrates real-time field data, satellite imagery, and expert analyses, • Provides accurate, real-time microclimate information through meteorological station data. • Detects disease risks in crops such as olives, grapes, and almonds in advance using the Decision Support System (DSS). • Monitors crop development with satellite-based vegetation indices, thereby reducing yield losses. • Tracks plant water stress using satellite and sensor data, promoting water savings and supporting sustainable production. • Records agricultural activities in order to enhance traceability and facilitate planning. • Encourages more informed and accurate farming practices through expert advisory support. • Simplifies the interpretation of satellite indices and sensor data, thereby enhancing agricultural literacy. • Optimises resource use by enabling interventions only in areas where pathogen alerts indicate necessity.
Registration Requirement	Required
Pricing	Paid (annual subscription model) Free of charge demo version is available upon request.
Download Availability	Android, iOS + Web-based platform Web site: https://www.elaisian.com
Daily Usage Limit	Not specified
Language	Multilingual support (depending on the platform, including English, Italian, Romanian, and Turkish)

Elaisian is an innovative decision support platform that combines satellite and sensor data with predictive models to enhance farmers’ agricultural and digital literacy skills. Through real-time alerts delivered via instant messaging services and in-app notifications, it helps prevent resource waste and supports circular economy principles in agricultural production.

2.6.4. Tarsim Mobil



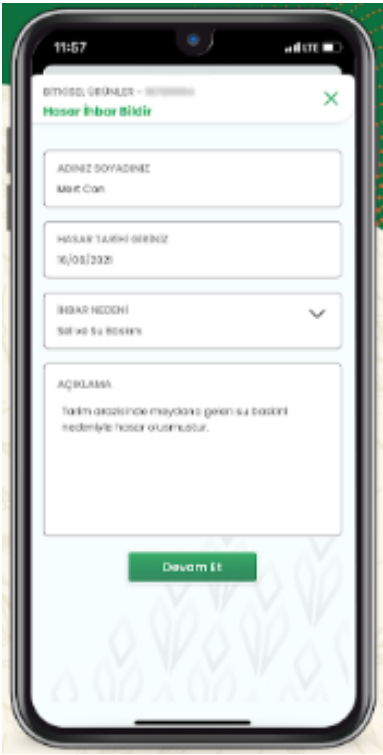
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Smart Decision Support System for Climate Risk Protection

Country of Origin	Türkiye / Tarım Sigortaları Havuz İşletmesi A.Ş. (TARSİM) (Agricultural Insurance Pool Management Inc. / TARSİM)
Category	Smart Agriculture and Decision Support Systems (DSS)
Target Group	👨‍🌾 Farmers and agricultural producers 🐄 Livestock producers (small ruminants, cattle, and poultry) 🐝 Beekeepers and aquaculture producers 🍏 Agricultural enterprise owners and greenhouse growers
Key Features	📄🔒 Insurance policy viewing and tracking 📞🗨️ Damage reporting and claim submission 📢📰 Updates, announcements, and statistical information ✉️📧 Information and request submission via the ⚠️🌤️ Agricultural risk, weather, and early warning notifications
Usage Method	After downloading the application, users can access policy information, report damages, and follow announcements and notifications related to agricultural risks by logging into the system using their Turkish ID number and password or through the e-Devlet (e-Government Gateway) integration.
Benefits Provided	This application, which supports farmers in managing agricultural insurance processes in a faster and more accessible digital environment, • Facilitates policy viewing, damage reporting, and claim tracking processes in a digital environment, saving time and administrative effort while reducing paper waste. • Provides early warnings and information regarding frost, hail, flood, drought, and other agricultural risks, thereby helping producers take preventive measures against potential losses. • Helps reduce economic losses caused by natural disasters and supports financial sustainability for producers. • Enables users to submit questions, requests, and information needs to the institution through the application, ensuring access to services independent of time and location. • Supports risk management, insurance awareness, and more informed agricultural decision-making through up-to-date announcements and statistical data. • Enhances agricultural, environmental, and financial literacy by increasing producers’ awareness of risk management and insurance through guidance content.
Registration Requirement	Not required for basic information services; however, viewing policy details, submitting damage reports, and carrying out insurance transactions require either an e-Government login or user authentication.
Pricing	Free of charge (Insurance policy premiums are paid separately and are state-subsidised)
Download Availability	Android, iOS Web site: https://www.tarsim.gov.tr/
Daily Usage Limit	Not specified
Language	Turkish (depending on the platform, including English)



Tarsim Mobil is an institutional solution that supports the sustainability of agricultural production against climate-related risks, simplifies insurance processes to enhance agricultural literacy, and strengthens digital literacy skills by enabling digital access to public services.

2.6.5. Ogor

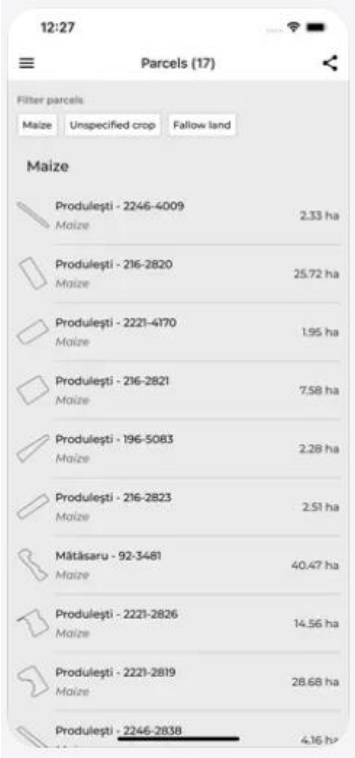
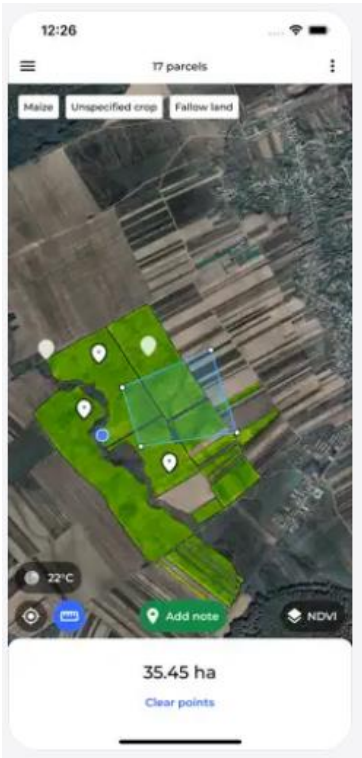


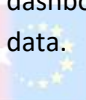
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Smart Decision Support Platform for Pedoclimatic Data-Driven Field Management



Country of Origin	Romania / Field Data Zoom Srl (Field Data Zoom Ltd.)
Category	Smart Agriculture and Decision Support Systems (DSS)
Target Group	🚗 Large and medium-scale farmers 🏢 Agricultural enterprises and production managers 🌿 Agricultural consultants and agronomists
Key Features	🌱📡 Weekly updated vegetation maps 🌍📊 Pedoclimatic (soil and climate) data analyses 📷📝 Field notes and photo-supported daily log system ✉️📊 Daily agricultural performance reports via email 👥📊 Platform access for collaboration with up to 2 users ☁️📅 7-day weather forecasts 📈🌿 Agricultural analysis and performance monitoring tools 📍🌿 Parcel-based field addition and management system (via APIA, manual entry, or file upload)
Usage Method	Users create an account via the website and define their agricultural fields in the system (through APIA integration, file upload, or manual delineation). Once the fields are added, users can monitor production processes in real time through the mobile application or web dashboard using weekly updated satellite imagery and pedoclimatic data. 
Benefits Provided	This application, which supports the monitoring and evaluation of agricultural production processes through satellite imagery and environmental data analysis, - Enables regular monitoring of production areas using weekly vegetation data. - Supports data-driven and informed agricultural decision-making through pedoclimatic and meteorological data, thereby reducing resource waste and improving circular production efficiency. - Identifies opportunities to improve production efficiency through field-based analysis and supports the effective use of resources. - Strengthens traceability and performance monitoring of production processes through a system of field notes, visual records, and reporting tools. - Enhances digital inclusion by enabling agricultural data analysis without the need for high-cost equipment. - Enables the monitoring of large-scale agricultural areas from a single platform, thereby strengthening risk management and increasing resilience to climatic uncertainties.
Registration Requirement	Required
Pricing	Paid after a 14-day trial period
Download Availability	Android, iOS + Web-based platform Web site: https://ogor.ro/
Daily Usage Limit	Not specified
Language	Romanian (depending on the platform, including English)

Ogor is an innovative decision support platform that enables the remote monitoring of agricultural processes through satellite imagery and pedoclimatic data analysis, thereby enhancing producers’ digital agricultural literacy and optimising resource efficiency through timely and accurate interventions.

3. Quick Access and Comparison Matrix

Application Name	Country of Origin	Category	Pricing	Key Strength / Technology
Agrivi	Croatia	Digital Field and Farm Management	Paid (Demo may be available)	Corporate Farm Management and Financial Analysis
xFarm	Italy	Digital Field and Farm Management	Free of charge + Paid (Premium)	IoT Integration, Machinery Tracking, and Telematics Data Management
Agricolus	Italy	Digital Field and Farm Management	Free of charge + Paid (Premium)	Satellite Indices, Phenological Modelling, and Smart Mapping
AgroVIR Agronomist	Hungary	Digital Field and Farm Management	Paid	Real-Time Cost Accounting and Smart Inventory Management
Tarım Cebimde	Türkiye	Digital Field and Farm Management	Free of charge (State-Supported)	Farm Registration System (FRS) Integration and Official Subsidy Tracking
Plantix – Your Crop Doctor	Germany	Plant Health and AI-Powered Diagnostics	Free of charge	Instant Disease Diagnosis and Prescription via Image Processing
Plantnet (Pl@ntnet)	France	Plant Health and AI-Powered Diagnostics	Free of charge	A Global Scientific Community-Supported Extensive Plant Database
Flora Incognita	Germany	Plant Health and AI-Powered Diagnostics	Free of charge	Europe-Focused, High-Accuracy Automated Identification
Planta: AI Plant and Garden Care	Sweden	Plant Health and AI-Powered Diagnostics	Free of charge + Paid (Premium)	Indoor Plant Care with Integrated Light Meter and Irrigation Scheduling
Plant App: Plant Identifier	Türkiye	Plant Health and AI-Powered Diagnostics	Free of charge + Paid (Premium)	AI-Powered Rapid Tree and Plant Diagnosis and Botanical Guide
FieldClimate	Austria	Weather Forecasting and Early Warning Systems	Free of charge + Paid (Premium)	Sensor Integration, Disease and Soil Moisture Analysis
WetterOnline	Germany	Weather Forecasting and Early Warning Systems	Free of charge + Paid (Premium)	High-Resolution Live Precipitation Radar and Hourly Meteorology
3BMeteo	Italy	Weather Forecasting and Early Warning Systems	Free of charge + Paid (Premium)	Lightning Tracking, Predictive Radar, and Expert Agrometeorology Videos
Meteoroloji Hava Durumu	Türkiye	Weather Forecasting and Early Warning Systems	Free of charge	MGM Radar Data and Real-Time Agricultural Meteorological Alerts
Alerte Meteo Romania	Romania	Weather Forecasting and Early Warning Systems	Free of charge	MeteoRomania Data with Monitoring of Mountainous and Critical Agricultural Areas
OneSoil Scouting: Farming Tool	Poland	Remote Sensing and Satellite-Based Agriculture	Free of charge + Paid (Premium)	NDVI Satellite Analysis, VRA Prescription Maps, and Offline Field Monitoring
Cropwise Operations	Switzerland	Remote Sensing and Satellite-Based Agriculture	Free of charge	Real-Time Satellite Monitoring and Telematics Operations Management
Atfarm	Norway	Remote Sensing and Satellite-Based Agriculture	Free of charge + Paid (Premium)	Variable Rate Application (VRA) Nitrogen Fertilisation and Chlorophyll Analysis
Orbit Uzaktan Tarla Takibi	Türkiye	Remote Sensing and Satellite-Based Agriculture	Paid after trial period	Satellite-Based Water Stress Maps, Early Warning Systems, and Variable Rate Fertilisation (VRA)
Tarlam Cepte	Türkiye	Remote Sensing and Satellite-Based Agriculture	Free of charge + Paid (Premium)	Regional Market Price Tracking and Smart Crop Protection Alerts
SatAgro	Poland	Agricultural Circular Economy, Input, Emission and Waste Management	Free of charge (limited-starter version) Paid (Premium)	Management Zones, Machine-Compatible Data Transfer, and Multi-VRA Mapping
Farmable: Farm Management	Norway	Agricultural Circular Economy, Input, Emission and Waste Management	Free of charge (basic version) Paid (Premium)	Fruit and Orchard Management and Input Chemical Optimisation
QS-Klimaplattform	Germany	Agricultural Circular Economy, Input, Emission and Waste Management	Free of charge (for QS system partners)	Carbon Footprint Calculation and Analysis, and Producer-Controlled Secure Data Sharing
Irristrat Mobile	Portugal	Agricultural Circular Economy, Input, Emission and Waste Management	Paid (Free demo access may be available via the web)	Soil Moisture Sensor Integration and Smart Water-Saving Management
CompostUMH	Spain	Agricultural Circular Economy, Input, Emission and Waste Management	Free of charge	Scientific Waste Balancing Algorithms and Agro-Waste Transformation
Vite.net	Italy	Smart Agriculture and Decision Support Systems (DSS)	Paid (Demo access may be available upon request)	Vine Modelling, Phenological Analysis, and Pest Alerts
Abaco Farmer	Italy	Smart Agriculture and Decision Support Systems (DSS)	Paid	End-to-End Traceability, IoT, and Logistics/Supply Chain Management
Elaisian	Italy	Smart Agriculture and Decision Support Systems (DSS)	Paid (Request for a free demo version)	Multi-Sensor Data, Water Optimisation Algorithms, and Integrated Early Warning via Instant Messaging Services
Tarsim Mobil	Türkiye	Smart Agriculture and Decision Support Systems (DSS)	Free of charge	Digital Policy Management, e-Government Integration, and Damage Reporting
Ogor	Romania	Smart Agriculture and Decision Support Systems (DSS)	Paid after trial period	Pedoclimatic Data Analysis and Automated Email Reporting Systems

4. Glossary of Key Concepts and Abbreviations

This section has been prepared to support a better understanding of the technical content, working principles, and core philosophy of the applications presented in the E-catalogue. The terms below aim to foster a common language for circular economy-oriented modern agricultural technologies, while also supporting the development of agricultural and digital literacy skills.

Following the introduction of the strategic concepts of the ThinkAgriCircular project, the key terms and abbreviations included in the educational categories of this E-catalogue will be explained in alignment with the same category headings. This approach is designed to enhance adults’ agricultural literacy skills within the context of the circular economy and to support self-directed learning.

This glossary is designed as a modular learning tool with a colour-coded and thematic structure to support the E-catalogue. The following system has been implemented to ensure users can access information as quickly as possible:

- **Colour-Based Matching:** Each main category heading and letter in the guide is colour-coded in alignment with the original category colours used throughout the E-catalogue. This allows users to quickly identify concepts or abbreviations encountered while reviewing an application by recognising their category colour.
- **Intra-Category Alphabetical Ordering:** Concepts are listed alphabetically (A–Z) within their respective thematic categories. This structure supports self-directed learning without disrupting the conceptual coherence of the agricultural field of focus.
- **Balanced Dual-Literacy Approach:** Definitions are written using both technical (digital) terminology and agricultural/ecological concepts in a clear and accessible language, designed to guide practical applications for adult learners in the field.

🔄 Circular Economy

A sustainable economic model that aims to prevent the waste of natural resources such as water and raw materials in agricultural production, minimise waste, emissions, and environmental pollution by optimising chemical and other input use, and reintegrate organic waste into the production cycle.

🌱 Agricultural Literacy

The competence of adult producers and educators to scientifically understand soil structure, climate dynamics, plant health, water management, and ecosystem cycles, enabling them to make accurate, efficient, and environmentally friendly decisions in field conditions.

💻 Digital Literacy

The ability of adult producers and agricultural stakeholders to effectively and safely utilise smart agricultural technologies such as mobile applications, AI-powered decision-making tools, sensor dashboards, and satellite imagery to optimise daily production processes and data managements.

🔗 Digital Field and Farm Management

A holistic management model that integrates traditional agricultural production methods with digital technologies, enabling the planning, recording, and optimisation of all operational and financial processes—such as labour, machinery performance, stock management, cost accounting, and land productivity—through a single software or mobile application.

A

- **Agronomist:** An agricultural specialist who conducts scientific studies on plant production, soil management, and crop productivity, translating theoretical field knowledge into practical agricultural solutions.
- **Automatic Data Synchronisation:** The process by which data from mobile applications, web interfaces, or field sensors is synchronised in real time via the internet, ensuring that all platforms remain continuously updated and consistent.
- **Automation Systems:** Technology that enables agricultural processes (e.g., opening irrigation valves, operating fertilization units) to run autonomously through smart software and sensors, without the need for human intervention.

C

- **Certification:** The process by which agricultural production is verified by independent certification bodies through digital documents, confirming that it complies with specific standards such as organic farming, Good Agricultural Practices (GAP), and GlobalGAP.
- **Cloud-Based Platform / System:** A technology in which data is stored and processed on secure internet-based servers rather than on a user’s computer or mobile device, enabling real-time access to data from any location and any device with an internet connection.

D

- **Data-Driven Decision-Making Mechanisms:** An approach in agricultural production where decisions are made rationally based on concrete, measurable data from sensors, satellites, and artificial intelligence analyses, rather than predictions or traditional practices.
- **Data Integration:** The process of combining scattered data from different sources (satellites, meteorological stations, soil analyses, government databases) into a single digital platform to create a meaningful and coherent whole.
- **Disease Warning Systems:** Software systems that analyse field sensor data and meteorological parameters (such as humidity, temperature, and leaf wetness) to predict the risk of disease occurrence in crops and notify producers about the optimal timing for preventive treatments.

E

- **E-Government Integration:** The secure connection of digital agriculture applications in Türkiye to the official e-Government (e-Devlet) infrastructure, facilitating user authentication and access to governmental data.
- **Ecosystem:** A balanced, living system formed by the interactions between living organisms (plants, animals, microorganisms) and non-living environmental factors (soil, water, climate) within a specific area.
- **End-to-End Monitoring:** The continuous tracking of all steps in the production chain—from soil preparation, input management, and crop growth to harvest and logistic—through a single platform.
- **Environmental Impact (Carbon Footprint):** The total amount of greenhouse gases (CO₂ equivalent) released into the atmosphere due to agricultural activities (fertilization, logistics, energy use, etc.), with the goal of minimizing this impact in sustainable agriculture.

F

- **Farm Registration System:** (FRS): A centralised government database system in Türkiye where producers register their fields, crop declarations, and agricultural assets, enabling access to agricultural subsidies and support programmes.

- **Financial Analysis:** The systematic examination of financial data such as production costs, income–expense balance, and profitability rates to ensure the economic sustainability of agricultural enterprises. In digital agriculture, this analysis enables producers to manage budgets more effectively by anticipating risks and making data-driven economic decisions.
- **Forecasting:** The scientific process of predicting potential agricultural events, risks, or production outcomes by analysing historical and real-time data from fields, satellites, and sensors, combined with advanced weather reports and artificial intelligence algorithms

G

- **Greenhouse Production Information:** The digital compilation, processing, and management of environmental and agronomic data—such as internal temperature, relative humidity, light intensity, and soil/substrate moisture—within protected cultivation environments. This systemic data provides producers with real-time insights to optimise macroclimatic conditions, manage resource efficiency, and implement precision climate control strategies to maximise crop yield and quality throughout the year.

I

- **Input Optimisation:** The use of production inputs such as water, fertilizer, and pesticides only in the required amounts and locations with the help of technology, preventing resource waste.
- **Integration:** The process of connecting independently operating software, hardware, databases, or systems so that they can exchange data and function together as a single, cohesive system.
- **Inventory Management:** The digital tracking and optimisation of quantities, inflows/outflows, and usage of all physical assets on the farm, including seeds, fertilizers, pesticides, fuel, and harvested crops.

M

- **Map-Based Field Management:** A system that enables the digital monitoring and management of each field individually by defining agricultural land boundaries on satellite maps or through official geospatial data.
- **Multimedia Notes:** The ability for producers to add field observations related to diseases, pests, or crop development into a digital system using smartphones, including photos, videos, or audio recordings with location data.

O

- **Operational Data:** Numerical and logistical data generated from all field activities such as planting, fertilization, spraying, and labour operations
- **Optimise:** To manage and adjust available resources (time, money, water, fertiliser, labour, etc.) in the most efficient and cost-effective way to achieve maximum benefit.

P

- **Pest Monitoring:** The process of continuously tracking and recording the presence, density, and movement of harmful insects, pests, mites, or weeds in agricultural fields.
- **Phenological Monitoring:** The digital observation of plant growth stages influenced by climatic conditions, such as germination, leaf development, flowering, fruit set, and harvest maturity.
- **Prediction Models:** Scientific methods that use historical agricultural data, artificial intelligence algorithms, and real-time meteorological information to estimate future weather conditions, disease risks, or yield outcomes.

Q

- **QR Code (Quick Response Code):** A two-dimensional barcode technology that provides instant access to relevant websites, information sources, or application download stores when scanned with mobile device cameras. (In this E-catalogue, it is positioned as a digital bridge enabling users to quickly and directly access the presented digital tools and agricultural software without delay.)

R

- **Resource Efficiency:** The process of achieving higher and better-quality yields while conserving soil health by using fewer natural resources and agricultural inputs.

S

- **Satellite Index:** A mathematically derived and mapped indicator calculated using satellite imagery and remote sensing technologies to assess parameters such as vegetation health, density, chlorophyll content, soil moisture, or drought conditions.
- **Sensor:** A smart device that measures physical and chemical changes in the field such as soil moisture, temperature, air quality, wind speed, or leaf wetness, converting them into digital data.
- **Smart Inventory Management:** The real-time tracking and optimisation of agricultural inputs (seeds, fertilizers, pesticides, etc.) and harvested products through digital tools. This approach, aligned with circular economy principles, reduces excessive input use and minimises resource waste and agricultural waste generation.
- **Sustainable Agriculture Models:** Environmentally friendly farming methods that protect natural resources, minimise environmental damage, and aim for economically profitable production without compromising the needs of future generations.
- **Synchronised:** The state in which data across different devices or systems is transferred in real time and updated simultaneously across all platforms.

T

- **Telematics / Telematics Management:** The remote monitoring and control of technical data (such as location, fuel consumption, malfunction status, and speed) from mobile agricultural machinery such as tractors and harvesters, or from fixed stations, through wireless technologies.
- **Traceability:** The ability to digitally record and track all stages of an agricultural product, from the seed planted in the field through spraying, irrigation, harvesting, storage, and finally delivery to the consumer.

V

- **VRA (Variable Rate Application):** A precision agriculture technology that applies inputs (such as seeds, fertilisers, pesticides, or water) only to the required areas and in the required amounts, based on satellite-derived prescription maps, instead of applying the same amount uniformly across the entire field.
- **Vegetation Index:** Numerical indicators obtained through the mathematical processing of spectral light reflections from satellite imagery, showing plant health status, chlorophyll density, or water stress levels.
- **Viticulture:** The specialized branch of agriculture focusing on the scientific study, cultivation, and sustainable management of grapevines. In modern agriculture, it integrates data-driven technologies and circular principles to optimize grape yield, soil health, and resource efficiency for winemaking and table grape production.

W

- **Water Footprint:** The total amount of freshwater consumed directly or indirectly throughout all production stages of an agricultural product, from planting and growth to harvesting, processing, and final consumption.
- **Web-Based Platform:** Digital systems accessible through internet browsers on computers or tablets, in addition to mobile applications, providing farmers and experts with detailed graphical analysis, reporting, and large-scale farm management capabilities.
- **Web Interface:** A wide-screen management and analysis panel that provides access to digital agriculture platforms through internet browsers on computers or tablets instead of smartphone applications.

Y

- **Yield Optimisation:** The process of maximising the quantity and quality of agricultural yield per unit area through smart management models while reducing input use and making the most efficient use of field and crop potential.

🔗 Plant Health and AI-Powered Diagnostics

The technology whereby issues encountered in plant—such as diseases, pests, or nutrient deficiencies—are analysed and diagnosed within seconds by artificial intelligence algorithms through a photograph captured via smartphone, subsequently offering tailored solution practices and treatment recommendations.

A

- **Agricultural Waste:** Organic materials such as stubble, pruning residues, fruit/vegetable peels, and animal manure remaining in the field or enterprise after agricultural production and harvesting, which can be converted into energy or compost within the scope of the circular economy..
- **AI (Artificial Intelligence):** Advanced technology that enables computers or digital systems to simulate high-level cognitive processes such as human-like learning, reasoning, problem-solving, and image/photo analysis.

B

- **Biodiversity:** The richness and variety of life formed by genes, plant and animal species, microorganisms, and ecological processes within a specific ecosystem, region, or across the entire world.
- **Botany:** The branch of plant science that investigates the structural frameworks, life cycles, nutrition, development, and environmental interactions of plants.

C

- **Chlorophyll:** The pigment that gives plants their green colour and enables photosynthesis; it serves as a primary indicator of plant health in digital analyses.
- **Citizen Science Contribution System:** A collaborative model where the general public (farmers, nature enthusiasts, adults) voluntarily contributes to scientific research alongside professional scientists by collecting data from nature (e.g., uploading a photo and location of an invasive weed to an application).
- **Climate Change:** Long-term climatic shifts resulting from changes in the composition of the atmosphere, which directly impact agricultural production periods and cultivation cycles.
- **Community Forum:** Digital mutual aid and collaboration spaces where individuals sharing the same interests or professions (farmers, botanists, experts) gather online to share information, ask questions, and exchange field experiences.
- **Cultivated Plant:** Plant species (e.g., wheat, tomatoes, corn) that have been taken from nature and domesticated by humans for food, clothing, medicine, or ornamental purposes, and are specifically sown, managed, and produced.

D

- **Data Monitoring:** The process of instantly or regularly recording and tracking daily operational activities in a field or enterprise (e.g., irrigation volume, spraying dates, fertilisation rates, temperature variations) via digital systems.

E

- **Ecology:** The branch of science that studies the relationships and interactions of living organisms both with one another and with their non-living environment (soil, water, air, climate).
- **Endemic Species:** Unique plant or animal species that grow naturally only in a specific region, country, or limited geographical area in the world, and are found nowhere else.

F

- **Fertiliser Calculator:** A digital tool that calculates the precise amount of crop nutrients (such as nitrogen, phosphorus, and potassium) required by entering the farmer's soil analysis results, the target crop type, and the projected yield goal into the system.
- **Flora:** The collective whole of all plant species growing in a specific geographical region, country, or geological period (vegetation cover).

G

- **Green Transition:** The process of transforming all sectors, from industry to agriculture, to phase out fossil fuels, shift to renewable energy, achieve zero waste, and transition to an eco-friendly, circular economic model to combat the climate crisis.
- **Groundwater:** Clean water resources formed by rain and meltwater filtering into the soil and accumulating above impermeable underground layers, serving a vital role in agricultural irrigation and drinking water supply.

H

- **Habitat:** The natural living area, environment, or "address" where a living species (plant, animal, or microorganism) can naturally live, grow, feed, and sustain its generation.

I

- **Invasive Species:** Aggressive plants or animals introduced either through human activity or natural means into an ecosystem outside their native habitat, which multiply rapidly in their new environment and cause harm to local species, agriculture, and the economy.

L

- **Light Meter:** A digital or mobile sensor tool that measures the light intensity (brightness) in the environment to ensure plants can perform photosynthesis and achieve healthy growth.
- **Location-Based Mapping:** The digital marking of the exact coordinates (latitude/longitude) of a plant, disease, or resource detected in the field or nature on a world map using GPS technology.

M

- **Minimise:** Minimising wastes, costs, chemical usage, water resource depletion, or carbon emissions within agricultural production processes to the lowest possible level.
- **Morphological Feature:** Visually observable physical and structural characteristics of a plant, such as leaf shape, flower colour, root architecture, height, or fruit texture.

P

- **Pesticide:** A general term for chemical or biological substances used in agricultural production to control, deter, or eliminate insects, fungi, bacteria, or weeds that harm crops.
- **Plant Database:** Large digital libraries operating like an application's search engine, where visuals, botanical information, cultivation/care requirements, and geographical distribution data of thousands of plant species are systematically stored.

S

- **Scientific Data Pool:** The consolidation of thousands of scattered data points (plant species, disease maps, soil structures, etc.) originating from individual farms or researchers into a single, centralised digital library for secure public and professional use.
- **Scientific Species Profiles:** Digital identity cards containing all biological and technical data of a plant, such as its official taxonomic name in the botanical world, origin, growth habits, and specific climate/soil requirements.

T

- **Sustainability:** The philosophy of producing and living in a manner that meets the needs of the present without depleting natural resources (soil, water, air, biodiversity) or disrupting the ecological balance, thereby safeguarding the rights of future generations.

U

- **Taxonomic Classification:** The system of scientifically classifying, grouping, and naming plants and other living organisms based on their degrees of kinship, similarities, and evolutionary connections (Phylum, Class, Order, Family, Genus, and Species).

- **Urban Agriculture:** The practice of food production in vacant lots, rooftops, vertical farms, or balconies located within or around urban centres; a production model that enables urban populations to access food locally.

 Weather Forecasting and Early Warning Systems

Digital decision-support systems that monitor atmospheric movements, instantaneous weather events, and microclimatic data through digital sensors and satellite technologies; they predict risks such as frost, drought, storms, or sudden disease and pest outbreaks beforehand, thereby enabling producers to take timely, proactive action.

A

- **Agro-meteorology:** The branch of science that studies the impacts of atmospheric events on agricultural activities and optimises the agricultural calendar.
- **Agrometeorological Data:** Meteorological parameters—such as air temperature, soil moisture, sunshine duration, wind speed, and relative humidity—that directly affect agricultural activities, processed and contextualised specifically with agricultural production in mind.

C

- **Climate Awareness:** The consciousness of comprehending the impacts of global climate change on agricultural production, adapting to shifting weather patterns, and shaping production models according to this understanding.
- **Climate Literacy:** The competence to understand the impacts of the climate system on agriculture, interpret meteorological charts and graphs, and develop circular/resilient solutions in the field against the climate crisis.

D

- **Digital Insect Traps:** Smart devices placed in the field that attract pests inside and, through embedded cameras and artificial intelligence, detect the species and density of the captured pests, subsequently sending early warnings to the farmer's smartphone.

E

- **Editorial Content:** The provision of not only automated data within an application but also curated guides, articles, recommendation videos, and informative texts filtered and prepared by agricultural and meteorological experts.
- **EUMETNET:** The European National Meteorological Services Network. An international organisation that enables the sharing and standardisation of meteorological data, early warnings, and weather observation infrastructures among countries across Europe.

G

- **GPS (Global Positioning System):** A technology that determines the precise coordinates (latitude and longitude) of a device (smartphone, tractor, etc.) on Earth using satellite signals, enabling agricultural applications to automatically detect the location of a field.

H

- **Hyper-Local Weather Forecasting:** Precision weather forecasting tailored to the exact coordinates of the user's field supported by artificial intelligence and local stations, rather than a general provincial or district forecast (sometimes targeting pinpoint locations within an area of 1–2 kilometres)..

I

- **Interface:** The digital design surface of a mobile application or software consisting of buttons, charts, and menus that the user sees and interacts with on the screen. For adult learners to use the application without difficulty, the interface must be simple and user-friendly.
- **IoT – (Internet of Things):** The technology that enables physical devices in the field—such as soil moisture sensors, digital weather stations, or smart valves—to exchange data with one another and with mobile applications over the internet.

M

- **Map-Based Management:** A model where the physical boundaries of a field are displayed on a digital map layer, and all agricultural decisions—such as fertilisation, irrigation, and disease tracking—are managed through visual data on this map.
- **Map Literacy:** The skill to accurately read and understand colours, symbols, scales, legends, and geographical layers on digital maps, and to utilise this data practically in agricultural planning.
- **Maximise:** Maximising the derived benefits, crop quality, or productivity within agricultural processes to the highest possible level by utilising available resources in the most efficient manner.
- **MeteoRomania:** The official National Meteorological Administration of Romania. The Romanian-originated applications in the E-catalogue retrieve their official weather and early warning data from this source.
- **MGM (Meteoroloji Genel Müdürlüğü /Turkish State Meteorological Service):** The official meteorological observation and forecasting body of Türkiye. It is the main data source that feeds the instantaneous radar and warning infrastructure of local and national applications in the E-catalogue.
- **Microclimatic:** Narrow and specific local climate conditions that differ from the surrounding environment due to local factors such as topography, aspect (the direction facing the sun), soil structure, or water presence within a broader geographical area dominated by general macroclimatic features.

N

- **Nowcasting Technology:** A very short-term and high-resolution weather forecasting method that enables the detection of sudden events, such as hailstorms, severe storms, or heavy downpours, just before they reach the field.

O

- **Optional:** Elective features beyond the core functionalities offered by an application, which users can enable, purchase, or customise based on their own preferences or practical needs.

P

- **Pollen:** Fine powder produced by plants for reproduction. Pollen tracking features in mobile applications are crucial both for monitoring agricultural pollination periods and for protecting field workers and beekeepers from allergic health risks.
- **Predictive Radar:** A technology that processes historical and real-time data received from advanced meteorological radars through artificial intelligence algorithms to forecast in which direction and with what intensity precipitation clouds or storms will advance in the coming hours.

R

- **Route-Based Instant Weather:** A dynamic system that displays real-time weather conditions encountered along the specific route a producer or transporter travels from the point of origin to the destination, particularly used during logistics and harvesting processes.

S

- **Satellite Technology:** The infrastructure that captures imagery of fields from above via satellites in Earth's orbit, measures chlorophyll levels, and continuously monitors crop development and weather patterns across expansive areas.

- **Simulation:** The artificial replication of real-world agricultural or meteorological processes in a digital environment with the assistance of computer models and mathematical algorithms.
- **Soil Moisture Analysis:** The process of instantaneously measuring and assessing the amount of water within agricultural land using sensors, satellites, or data analytics

U

- **UV (Ultraviolet) Radiation:** Invisible electromagnetic rays originating from the sun. In agricultural applications, UV index tracking is utilised both to prevent damage to crop leaves caused by excessive radiation (sunburns) and to safeguard the skin health of field labourers.

W

- **Water Stress:** A condition where a crop cannot absorb sufficient water due to low soil moisture levels or excessive transpiration, leading to slowed metabolic development. Digital tracking systems detect water stress early, thereby preventing resource depletion and drought risks.
- **WeatherRadar:** An advanced meteorological imaging system that detects the position, direction, speed, and intensity of precipitation particles (rain, snow, hail) in the atmosphere, displaying them on a map via live and animated graphics.
- **Weather and Early Warning Systems:** A general term for digital infrastructures that protect crops from losses and prevent resource waste by notifying producers of sudden meteorological shifts (frost, hail, extreme precipitation) and associated plant diseases that may develop.
- **Widget:** Small shortcut windows added to the home screen of mobile phones that continuously display real-time weather conditions, frost warnings, or critical agricultural alerts without requiring the user to open the application itself.

✈ Remote Sensing and Satellite-Based Agriculture

The science and technology that records the light and energy reflected from the land without making physical contact with agricultural areas on Earth, utilising satellites in orbit, unmanned aerial vehicles (UAVs), or specialised sensors. Thanks to this digital infrastructure, the development of expansive agricultural lands, plant health, and soil structure are monitored and analysed from above, allowing production processes to be managed holistically in a data-driven manner.

C

- **Chlorophyll Analysis:** The measurement of the amount of green pigment (chlorophyll) in plant leaves—which enables photosynthesis—using digital sensors or optical satellite data. This analysis accurately determines the health status, growth performance, and nitrogen/fertiliser requirements of the plant.

D

- **Digital Documentation:** The process of recording all physical activities carried out in the field—such as sowing, fertilisation, harvesting, costs, and yield—in digital environments (cloud systems, mobile applications) rather than using paper and pen, ensuring they are organised, archivable, and retrospectively traceable.
- **Digital Inclusion:** The state in which every adult in society, regardless of age, gender, education level, or region of residence, has equal, fair, and easy access to digital technologies, mobile applications, and internet infrastructure, alongside the competence to utilize these tools in practical life.

N

- **NDVI (Normalized Difference Vegetation Index):** A digital index that shows the green biomass density (photosynthetic capacity) and health of plants by measuring the visible and infrared light reflected from the field via satellites. On the map, green areas represent healthy vegetation, while red areas indicate weak or stressed plants.
- **Nitrogen Metre (Nitrogen Sensor):** Digital tools that measure the amount of nitrogen (N)—one of the most critical elements for plants to perform photosynthesis and develop—from the leaves or the soil. Accurate nitrogen measurement prevents over-fertilisation, thereby avoiding chemical contamination of the soil and supporting circular production.

P

- **Portable Chlorophyll Metre:** Handheld devices that instantly measure the amount of chlorophyll (green pigment) inside a leaf directly in the field without damaging the plant tissue. The chlorophyll content provides immediate data regarding the plant's health status and nitrogen requirements.
- **Precision Fertilisation:** The process of applying crop nutrients to the plant at the exact time and in the precise amount required, by determining which zone of the field needs how much fertiliser based on data obtained from satellites or sensors.
- **Precision Agriculture Management:** An approach that utilizes advanced technologies (GPS, satellites, artificial intelligence) to apply agricultural inputs (water, fertiliser, seeds, pesticides) to the exact extent required by the variable needs of the field, thereby minimising environmental degradation and maximising sustainability.

S

- **Satellite-Supported Field Tracking:** The instantaneous monitoring of crop development, anomalies, and moisture variations in the field from the comfort of one's home, by processing images received at regular intervals from Earth-orbiting observation satellites (e.g., Sentinel, Landsat) via mobile applications.
- **Seed Map (Sowing Map):** A digital layout and application plan that shows how many seeds should be dropped per square metre in specific zones of the land, based on soil structure, moisture rates, and historical productivity analyses of the field.
- **Soil Health / Crop Rotation:** A method of sequentially planting different crop species (e.g., wheat in the first year, followed by legumes like chickpeas the next year) within a specific plan, rather than sowing the same crop year after year on the same field, in order to preserve the soil's nutrient balance and break disease cycles. It is one of the most fundamental circular economy practices for preserving soil health.
- **Sustainable Farming / Crop Rotation:** The consecutive cultivation of different plant families (e.g., row crops, legumes, and cereals) in a specific order on the same land to prevent the unilateral depletion of soil nutrients, improve soil structure, and biologically break pest/disease cycles.

W

- **Water Resource Protection / Groundwater:** Clean freshwater resources formed by rain or infiltration seeping beneath the soil and accumulating between rock/soil layers, creating natural underground aquifers. Since excessive chemical usage or unconscious irrigation in agriculture contaminates and depletes groundwater, precision agriculture technologies aim to safeguard these resources.
- **Water Stress Maps:** Digital maps that show which parts of the field are experiencing water deficiency or are facing the risk of drying out due to excessive transpiration, utilizing satellite thermal imagery and infrared data.

V

- **VRA (Variable Rate Application):** *(See Digital Field and Farm Management)*

🔄 Agricultural Circular Economy, Input, Emission and Waste Management

A sustainable, regenerative, and eco-friendly production approach that minimises the use of raw materials and inputs (water, fertiliser, pesticides, energy) in agricultural production processes; reinstates organic and inorganic wastes generated as a result of production back into the system through recycling, and aims to reduce greenhouse gas emissions released into the atmosphere.

A

- **Agricultural Circular Economy:** A sustainable production model in the agricultural sector that minimises the use of raw materials and inputs while recycling organic and inorganic wastes generated during production to reintegrate them back into the system.
- **Agro-Waste:** *(See Plant Health and AI-Supported Diagnostics)*
- **Agro-Waste Conversion:** The transformation of organic waste and by-products generated from agricultural activities, livestock, and food processing into high value-added new products—such as compost, organic fertiliser, biomass energy, bioplastics, or animal feed—using biological or chemical methods.
- **Agrocompost Training:** Educational activities aimed at adult learners that cover the processes, techniques, and application steps of biologically decomposing plant and animal wastes generated in agricultural production into nutrient-rich natural fertilisers (compost).
- **Automated Spray Reports:** A digital documentation system derived from smart spraying machinery or mobile applications that automatically maps and logs which zone of the field was treated with what dosage of crop protection products (pesticides) and at what exact time.

C

- **Carbon Emission:** The release of greenhouse gases into the atmosphere due to energy consumption, soil tillage, and logistics processes during agricultural production; it stands as one of the largest drivers of the climate crisis.
- **Carbon Footprint (Environmental Impact) Analysis:** *(See Digital Field and Farm Management)*
- **Certification:** *(See Digital Field and Farm Management)*
- **Circular Resource Management:** A strategy where agricultural inputs such as water, soil, seeds, and fertilisers are utilised with maximum efficiency, wastes are minimised, and any resulting residue is reintegrated back into the production cycle, rather than following a "take-make-dispose" logic.
- **Cloud-Based Software:** *(See Digital Field and Farm Management)*
- **CO₂ (Carbon Dioxide):** The primary greenhouse gas released into the atmosphere through fossil fuel combustion, agricultural activities, and industrial processes, driving global warming and climate change. Circular agriculture practices aim to reduce CO₂ emissions by utilising the soil as a carbon sink.
- **Compost:** A natural fertiliser that nourishes and enriches the soil with organic matter, obtained through the controlled decomposition of agricultural, domestic, or industrial organic wastes (crop residues, leaves, manure, etc.) via microorganisms; it is the most fundamental output of waste management.
- **Compost Formula Optimisation:** The process of calculating and adjusting the ideal Carbon/Nitrogen (C/N) ratio, moisture levels, and aeration balance within organic wastes using digital algorithms or mobile applications to obtain high-quality compost.

D

- **Digital Documentation:** *(See Remote Sensing and Satellite-Based Agriculture)*
- **Digital Inclusion:** *(See Remote Sensing and Satellite-Based Agriculture)*

E

- **Emission Management:** The process of digitally monitoring and measuring greenhouse gases (emissions) released into the atmosphere due to tractor usage, livestock activities, or fertilisation in agricultural holdings, and planning green strategies to reduce these releases.

F

- **Fertiliser Leaching:** A environmental contamination hazard where chemical fertilisers, applied in excess of crop needs or at incorrect times, leach deep into the soil due to precipitation and over-irrigation, mixing into groundwater resources; precision input management effectively prevents this leaching.

G

- **Green Financing:** Specialised credit, incentive, and financial support models provided by international funds, banks, or EU grants to support eco-friendly projects such as sustainable agriculture, the circular economy, carbon emission reduction, and waste management.

H

- **Historical Data Analysis:** The process where artificial intelligence examines past years' weather patterns, satellite imagery, fertilisation logs, and harvest data of a field to generate future predictions regarding the circular economy and productivity.

L

- **Local Waste:** Recyclable organic materials—such as crop stalks, pruning residues, or manure—that are generated directly at the production site within a specific region, village, or agricultural holding, without requiring external transportation.

M

- **Management Zones:** The dividing of a large agricultural land (field) into small, homogenous sub-regions with distinct needs based on soil structure, yield potential, water retention capacity, or NDVI indices. Instead of distributing inputs uniformly, this model applies fertiliser, pesticides, and water precisely according to the specific needs of these designated zones.

O

- **Operational Processes:** The entirety of daily field activities carried out within an agricultural holding, including sowing, irrigation, fertilisation, spraying, harvesting, and labour management.
- **Optimisation Analysis:** The ideal calculation and design of available agricultural resources (inputs) by digital systems to maximise efficiency and eco-friendly gains while minimising operational costs.

P

- **Prescription Maps:** Digital application instructions uploaded to smart agricultural machinery that micro-target and determine how much fertiliser, pesticide, or seed should be distributed to specific zones of a field, based on data derived from satellites and soil analyses.

R

- **Regenerative Agriculture:** A holistic circular farming model that goes beyond merely conserving existing soil to increase biological diversity, improve water retention capacity, enrich organic matter content, and restore the overall ecosystem to a healthier state than before.

S

- **Seed Map (Sowing Map):** *(See Remote Sensing and Satellite-Based Agriculture)*
- **Smart Water Conservation Management:** The optimisation of agricultural irrigation processes according to the actual needs of the crop through digital sensors, meteorological data, and artificial intelligence-backed automation systems.
- **Smart Tank Mix:** A digital system that utilizes artificial intelligence algorithms before agricultural spraying to analyse whether multiple chemicals or fertilisers can safely mix within a spray tank and to determine their correct sequence of addition; it prevents chemical precipitation, crop damage, and input waste caused by incorrect mixtures.
- **Soil Erosion:** The process where the most fertile and organic-matter-rich top layer of soil is eroded and transported by water, wind, or incorrect farming techniques (e.g., excessive tillage); regenerative agriculture practices aim to completely eliminate erosion.
- **Soil Sampling:** The procedure of testing soil samples collected from specific depths and locations representing the overall field, using laboratories or digital sensors to determine nutrient elements and organic matter content.
- **Sustainable Supply Chain:** The process of maintaining a low carbon footprint, adhering to fair trade principles, and minimising environmental degradation at all stages of an agricultural product, from its raw materials (seed, fertiliser) to reaching the consumer (logistics, processing, packaging).
- **Sustainable Waste Management:** The process of collecting, transporting, and processing all agricultural residual materials in a manner that does not harm environmental or human health, transforming them into economic value through circular methods such as composting.

- **Sustainable Production Cycles:** Continuous and balanced production processes that run on self-renewing systems where waste is converted back into raw materials, operating without depleting natural resources or compromising the needs of future generations.
 - **Synchronisation:** *(See Digital Field and Farm Management)*
- T**
- **Traceable Agricultural Practices:** A digital recording and transparent tracking system where every stage of an agricultural product —starting from the seed sown in the field to the fertilisers used, pesticide applications, harvesting methods, and its delivery to the consumer—is documented.
- V**
- **VRA (Variable Rate Application):** *(See Digital Field and Farm Management)*
- W**
- **Water Management Analysis:** A digital evaluation method aiming to eliminate water waste by measuring exactly where, when, and how effectively every drop of water in the field is consumed, utilising digital sensors and smart analytical tools.
 - **Waste Balancing Algorithms:** Artificial intelligence-based mathematical models that analyse the volume, type, and logistical data of waste generated in agricultural production processes to plan their most efficient reuse or recycling.
 - **Watering (Irrigation) Modelling:** A decision-support system that combines soil structure, crop type, and weather forecast data to artificially simulate and schedule precisely when and for how many hours a crop should be irrigated using computer algorithms.
- Z**
- **Zero Waste:** A waste management philosophy aiming to entirely prevent waste generation in production processes, reduce waste at its source, and eliminate resource depletion by recycling all unavoidable residuals.

🔗 Smart Agriculture and Decision Support Systems (DSS)

A holistic approach that integrates traditional farming methods with advanced digital tools such as artificial intelligence, the Internet of Things (IoT), sensors, satellite technologies, and data analytics. These systems guide producers by processing raw data collected instantaneously from the field, soil, and weather conditions. By generating data-driven and pinpoint recommendations to farmers' critical questions—such as "when should I irrigate?", "what amount of fertiliser should I use?", or "is there a disease risk?"—they minimise the margin of error. In this respect, it is a strategic digital transformation model that serves the circular economy by preventing resource waste, enhances the risk management capacity of producers, and ensures that the most accurate decisions are made throughout agricultural processes.

- A**
- **Agricultural Logistics:** A specialised branch of logistics focusing on transporting perishable agricultural products from the field to processing facilities or markets by maintaining the cold chain, minimising waste, and utilising the most carbon-efficient transit methods.
 - **Agricultural Value Chain:** The entirety of all stages and the economic value created throughout them, starting from the seed hitting the soil, through production, harvesting, processing, packaging, agricultural logistics, and ultimately reaching the consumer's table.
 - **Agro-Meteorological Data Analysis:** The process of digitally analysing meteorological data directly affecting agricultural activities—such as air temperature, soil moisture, wind speed, and precipitation—by correlating them with crop growth stages and disease risks.
 - **Algorithm:** A chain of mathematical commands running in the background of agricultural mobile applications that processes complex data received from fields and satellites to generate concrete recommendations for farmers, such as "irrigate now" or "high disease risk, time to spray".
 - **APIA (Asociația de Plăți și Intervenție pentru Agricultură / Agricultural Payments and Intervention Agency):** The official body in Romania managing agricultural supports, subsidies, and farmer registries. It stands as the legal equivalent of Türkiye's ÇKS (Farmer Registration System) structure in Romania-partnered processes.
- D**
- **Data Analytics:** The process where raw data collected from the field (soil moisture, satellite reflections, etc.) is processed by computer systems to be transformed into meaningful information, aiming to perform future yield forecasting, risk analysis, and resource optimisation.
 - **Decision Support System (DSS):** Intelligent software systems fed by in-field sensors, satellites, and historical agricultural data that guide farmers and agricultural managers to make the most accurate, efficient, and cost-effective decisions in complex scenarios (e.g., fertilisation quantities, sowing timing, and risk analysis).
 - **Digital Inclusion:** *(See Remote Sensing and Satellite-Based Agriculture)*
- E**
- **E-Government (E-Devlet):** *(See Digital Field and Farm Management)*
- F**
- **Financial Sustainability:** The capacity of an agricultural holding or a farmer to sustain production activities profitably in the long term by accurately managing the income-expense balance, preventing over-indebtedness, and avoiding resource waste while preserving natural resources.
- I**
- **Integrated Pest Management (IPM):** A holistic plant protection approach that combines biological, cultural, and mechanical methods rather than relying solely on chemical pesticides when combating pests and diseases in the field, thereby preventing pesticide waste, protecting environmental health, and supporting the circular economy.
- L**
- **Logistics:** The planning of processes for transporting, storing, and distributing agricultural inputs or harvested crops from one point to another at the right time, in the right quantity, without damage, and at the lowest possible cost.
- P**
- **Pathogen:** Microscopic harmful organisms such as bacteria, viruses, or fungi that cause infections in plants, leading to diseases and subsequent yield losses.
 - **Pathogen Alerts:** Automated warnings issued in the light of climate data when the risk of formation increases for microorganisms (fungi, bacteria, etc.) that cause plant diseases.
 - **Pedoclimatic:** A scientific term expressing the joint and reciprocal impact of soil structure (pedological) and climate conditions (climatic) on agricultural production in a specific region. Regional crop modelling in smart agriculture is established based on this data.
 - **Perennial Plant:** Crop species (e.g., olives, grapevines, fruit trees, etc.) that, once planted, continue to yield crops over many years from the same root system without requiring re-sowing every year.
 - **Policy (Insurance Policy):** The official insurance contract in agricultural insurance showing that a producer has secured their crop against natural disasters such as hail, frost, or floods, and tracks risk management digitally.
- T**
- **Turkish ID Number:** The unique 11-digit official identification number assigned to citizens of the Republic of Türkiye, which producers use to log into e-Government-integrated smart farming applications and verify their identities securely.

V

- **Vegetation:** The general term for the entirety of plant life present in a specific geographical area or agricultural land. In smart agriculture, the density and health status of this vegetation are monitored remotely via satellite imagery.
- **Vine Management Model:** An intelligent system optimised specifically for vineyard management that digitally tracks the phenological development of vines, cluster health, and specific disease risks such as downy mildew or powdery mildew in coordination with meteorological data.
- **Viticulture:** *(See Digital Field and Farm Management)*

W

- **Water Management:** *(See Agricultural Circular Economy, Input and Emission/Waste Management)*



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5. Conclusion and General Evaluation

This E-catalogue has been designed with the understanding that a holistic digital transformation in the agricultural sector is a fundamental prerequisite for a sustainable and resilient future. The 30 innovative digital farming applications compiled under the scope of the ThinkAgriCircular project aim to enhance the technological competences of adult learners, activate data-driven mechanisms in production processes, and integrate circular economy principles with modern agricultural practices.

The digital tools categorised and presented throughout this study offer tangible solutions to the sector in terms of utilising natural resources more efficiently, strengthening sustainability in production processes, reducing waste, and increasing adaptation capacity against climate change. In this regard, the study lays the groundwork for lifelong learning processes by simultaneously strengthening both the agricultural and digital literacy skills of the target groups.

Ensuring that technology serves green transition and nature-compatible production models, alongside the open-access dissemination of knowledge, stands among the core priorities of the project. This study is envisioned to serve as a guiding, inclusive, and dynamic reference source for all sectoral stakeholders, particularly farmers, agronomists, agropreneurs, and educators.

This E-catalogue is presented for the use of the public and stakeholders with the aim of ensuring the integration of digital innovations with the concept of circular agriculture, and providing permanent contributions to the development of a more efficient, sustainable, climate-resilient, and eco-friendly agricultural ecosystem.

