XFARM
TECHNOLOGIES

AGRIBUSINESS
DIGITAL TRANSFORMATION

Digitisation services for agri-food chains that want to start innovation projects

Lot 137643 — 6.27 t

Crop: Iceberg Salad
Supplier: COOP. La Ridente
Regime: Organic farming
Current yield: 33.45 t/ha

19/07/2021 Cleaning — To do
16/07/2021 Harvesting — Done
14/05/2011 Defence (*Bremia lactucae*) — Done

Traceability — Check Activity — Sustainability

Your guide in agricultural processing

CHALLENGES FOR THE NEW DECADE

The agri-food industry has faced great changes during the beginning of the new millennium and is entering a new decade full of demands, obligations and goals. The expansion in the use of technology, the focus on sustainability and the instability of globalisation are leading to major evolutions. Consumers are increasingly attentive to the origin of raw materials, the level of environmental sustainability and production ethics. On the other hand, institutions are initiating restrictive processes in order to achieve environmental neutrality and promote the digital transformation of supply chains.

CARBON NEUTRALITY

Carbon dioxide balance

zeroing of net CO2 emissions at farm and supply chain level

WATER FOOTPRINT

Impact on water resources

reduction and management of water used in production and transformation processes

BIODIVERSITY

Respect for balance

protection of animal and plant species, balance and their mutual relations

FOOD SAFETY

Food safety

respect for food hygiene and wholesomeness, with processes for batch analysis and traceability

ESG

Environmental Social Governance

verification, measurement, control and improvement of companies' sustainability efforts

TRACEABILITY

Sharing history

registration, securitisation and exposure of product history for transparency and marketing purposes

THE 5 OBJECTIVES OF PROJECTS 4.0

After years of work in the sector, we have identified five pillars for the digital transformation of agri-food supply chains. These are five critical areas that can be involved in different digitisation projects. Thanks to the modularity of our services, it is possible to carry out an analysis of the project goals, to choose which specific topics will have to be implemented in order to guarantee a concrete and successful project.
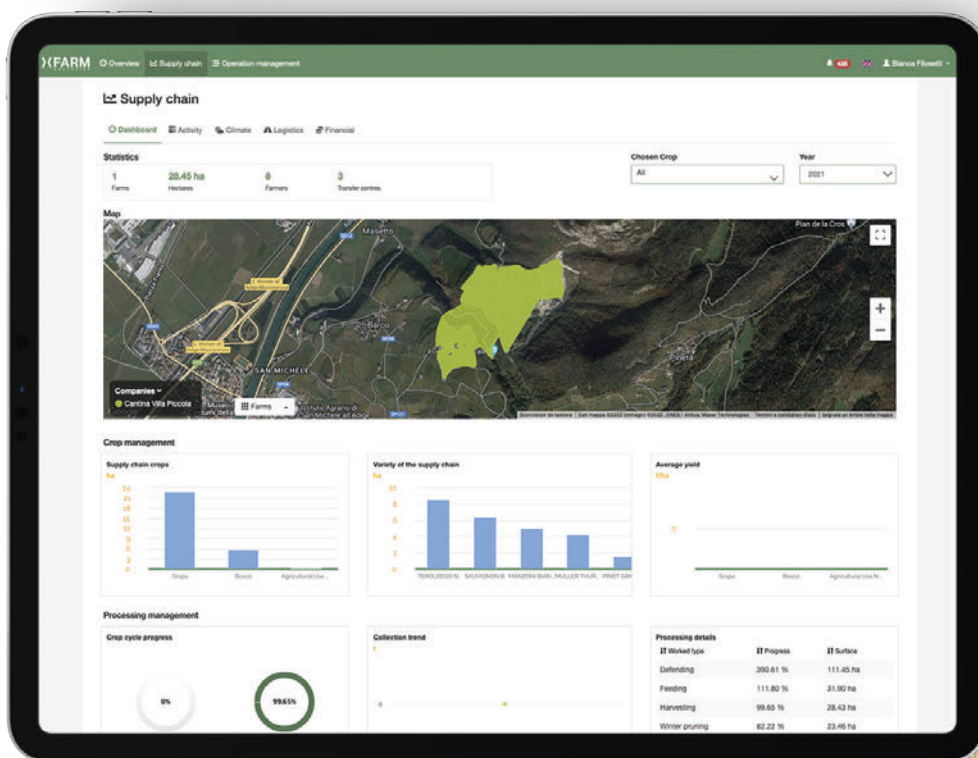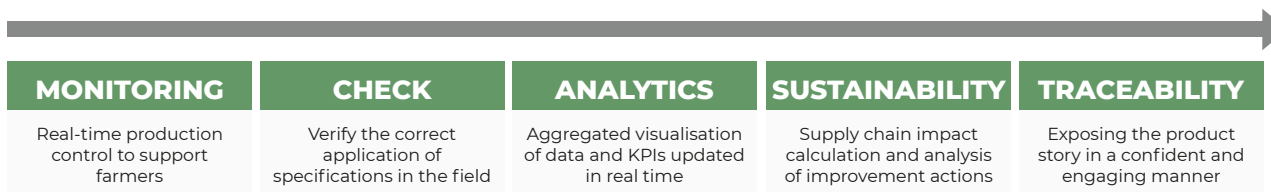
Farms	Technical Service	Stackers and Coop.	Food companies	Consumer

MONITORING	CHECK	ANALYTICS	SUSTAINABILITY	TRACEABILITY
Real-time production control to support farmers	Verify the correct application of specifications in the field	Aggregated visualisation of data and KPIs updated in real time	Supply chain impact calculation and analysis of improvement actions	Exposing the product story in a confident and engaging manner

All actors and supply chain operations in real time

OUR APPROACH

Successful digital transformation involves two paradigms: man and machine.
The xFarm team, consisting of managers, agronomists and engineers, is prepared to design, implement and assist each project in the best possible way, taking full advantage of the Open Innovation and Agile paradigms.

In addition to this, since 2017 we have been developing technology specifically for the primary sector, in order to guarantee flexibility, speed and effectiveness to our customers and users, while retaining the know-how of technological products already validated by tens of thousands of agribusiness professionals.

In particular, we pay special attention to the following aspects:

INCLUSIVITY

Involvement of the supply chain:

projects must involve all actors in the supply chain and data must be collected first-hand

TECHNOLOGY

Userfriendly solutions:

the tools must provide an easy and motivating user experience to stimulate compilation

SUPPORT

Training and assistance:

farmers and technicians must be involved in specific training sessions where they can be stimulated and supported

THE XFARM ROUTE

xFarm is in charge of designing, implementing and following Digital Transformation paths in the agri-food sector, providing stakeholders with services and solutions capable of achieving their objectives.

1. ANALYSIS OF PROJECT OBJECTIVES

2. IDENTIFICATION OF SUPPLY CHAIN ACTORS TO BE INVOLVED

3. IDENTIFICATION OF REQUIRED TECHNOLOGIES

4. SETUP OF THE NECESSARY TECHNOLOGICAL TOOLS

5. DATA PRIVACY MANAGEMENT

6. TRAINING SESSIONS WITH FARMERS AND TECHNICIANS

7. SENSOR INSTALLATION AND ACCOUNT SETUP

8. CONTINUOUS SUPPORT AND MONITORING

Farmer-friendly

In 2018, we launched the xFarm platform, a Farm Management Information System that supports farmers and technicians in managing their farms in a simple, intuitive and mobile way.

Our experience has enabled us to develop various functionalities, ranging from precision agriculture to agronomic support, via bureaucracy and administration.

Today, the xFarm platform is used by tens of thousands of farmers in Italy, who work with us to constantly improve it.

SUPPLY CHAIN MANAGEMENT

OVERVIEW

View all connected companies at a glance on a minimalist and effective map

STATUS

Graphs and tables useful for monitoring the current situation on related farms

ACTIVITIES

Displays the overall status of field operations and the crop breakdown

CLIMATE

The control centre for environmental parameters collected by your sensor network on farms

LOGISTICS

View the location of logistics centres in the supply chain, goods movements and mileage

FINANCE

View the operating budget of related companies, varieties and activities

App xFarm

Sensors Iot xFarm
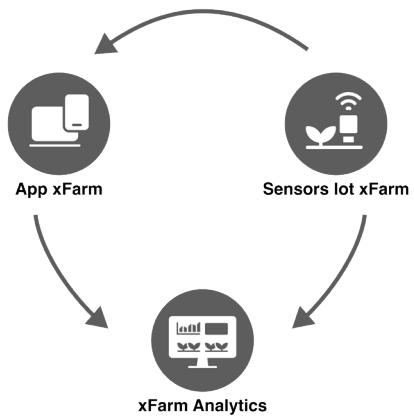
xFarm Analytics

How it works

The xFarm system is based on three pillars:
- **The xFarm app,** used by farms for crop management and data collection
- **xFarm sensors** monitor the environment and provide suggestions to technicians and farmers
- **The xFarm Analytics platform,** accessed by stakeholders and technical staff, which collects data from sensors and farmers to provide a comprehensive and detailed view in real time

XFARM ANALYTICS

The digital control centre of the agri-food chain

With xFarm Analytics, all workers in the food supply chain, from technician to stocker, have a digital tool to monitor farms and related sensors. The platform can be used both on PCs as a webapp and on smartphones and tablets as a mobile app.
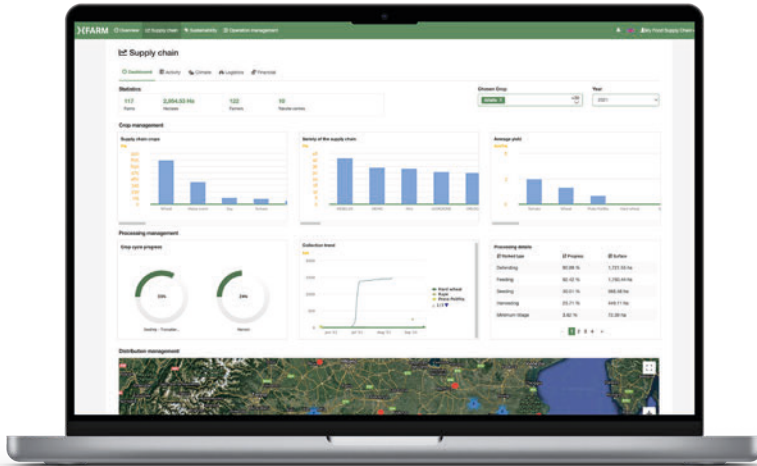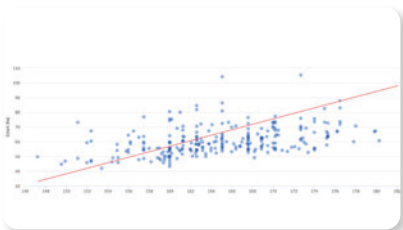
Dashboard

Monitor supply chain parameters easily and visually with real-time updated graphs and tables.
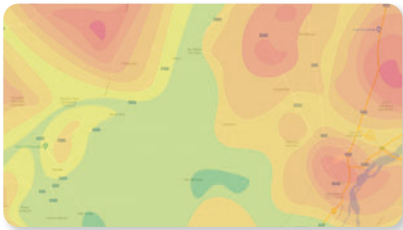
Climate monitoring

It visualises the information collected by sensors in an aggregated way to understand environmental trends and better support farms.

Yield analysis

It displays the positioning of different connected farms according to yields and input utilisation, so as to distinguish the most virtuous ones from those that need more support.


Analytical logistics

Check the location of storage centres, verify the route of raw materials from the field to the factory and make decisions to improve the impact of logistics.

SUSTAINABILITY

Monitor, Analyse and Improve Supply Chain Impact

Sustainability is the function that uses the information collected throughout the supply chain to calculate the global and specific impact of activities, providing important information for corrective programmes and marketing activities.
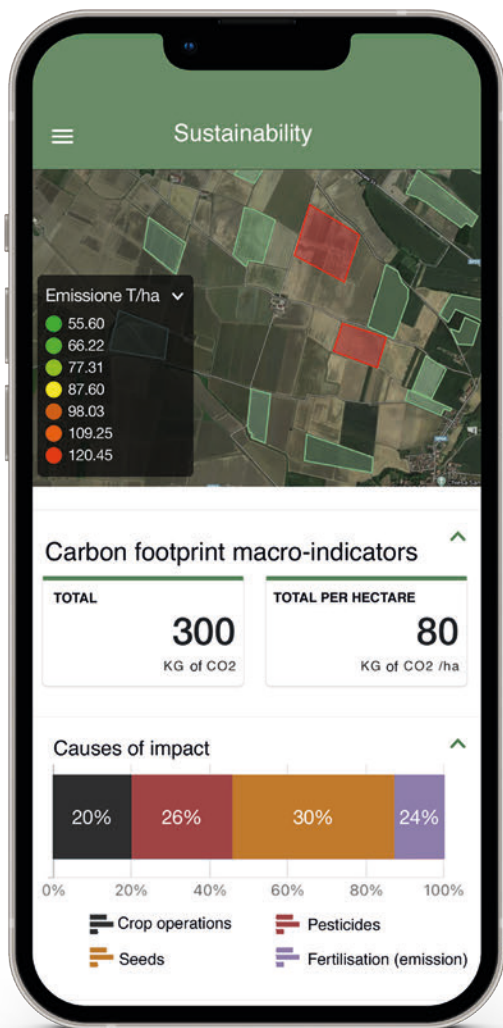
How it works

xFarm uses certified and ISO14040-compliant modelling and calculators to attribute the weight of each recorded activity, relating it to yields and agronomic strategies, in order to identify good agricultural practices, the most virtuous farms and share the data with the consumer to enhance environmental compliance.

Carbon Footprint		
CO2 Emission:	0,7 kg	0,2 kg / ha
Total CO2 emitted:	50 kg	3 kg / ha
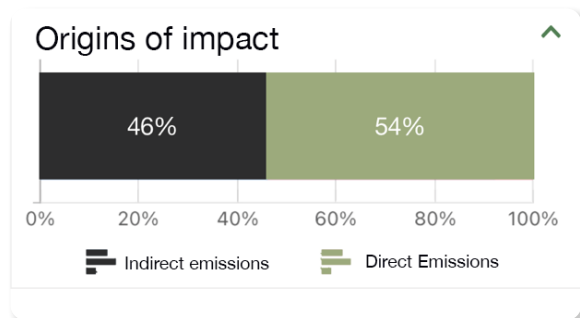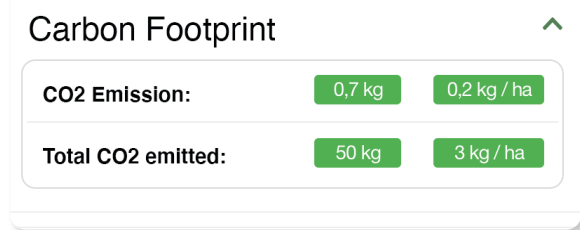
Carbon Footprint	Acidification	Eutrophication	Water Footprint	Nitrogen utilisation effect

Main monitored indicators, further parameters are available on request

Analyse and compare your supply chain

Sustainability calculations can not only be seen through an aggregated overview, but it is possible to go down to the detail of the individual farm, to analyse the situation in depth.

The system also provides useful functions for highlighting the most virtuous farms, so that they can be identified and compared with those where changes in cropping strategy are needed to improve impact.

In this regard, a specific window allows a visualisation at a glance of two specific companies and their differences.

OPERATIONAL MANAGEMENT

The control panel to go into the details of the supply chain

With the Operations Management function, it is possible to visualise ongoing activities on farms, either through a global overview, or by entering the details of individual activities. This tool is particularly suitable for field technicians, who assist and guide farms.

Monitoring

View details of related companies, crop status and monitor activities. Through the calendar and resource management functions, it is possible to check both the operations already performed and historicised, and the activities planned for the near future.

Planning

Through the planning function, it is possible to schedule activities to be done, supporting farmers and passing on advice in a simple and understandable way.

This function is particularly suitable for the most critical and coordinated operations, such as Defence and Harvest, where timing and product selection play a particularly important role.

Notes and warnings

In Operations Management it is possible to view all recorded Notes, i.e. reports entered by farm users or technical staff, to remind them of a certain situation.
Each note may contain:
- The detection position
- The field of reference
- Title and description
- Attachments, such as photos and documents
- The user and the reporting company
Notes is the ideal tool for tracking pests, saving specific documents and communicating precisely with farms.
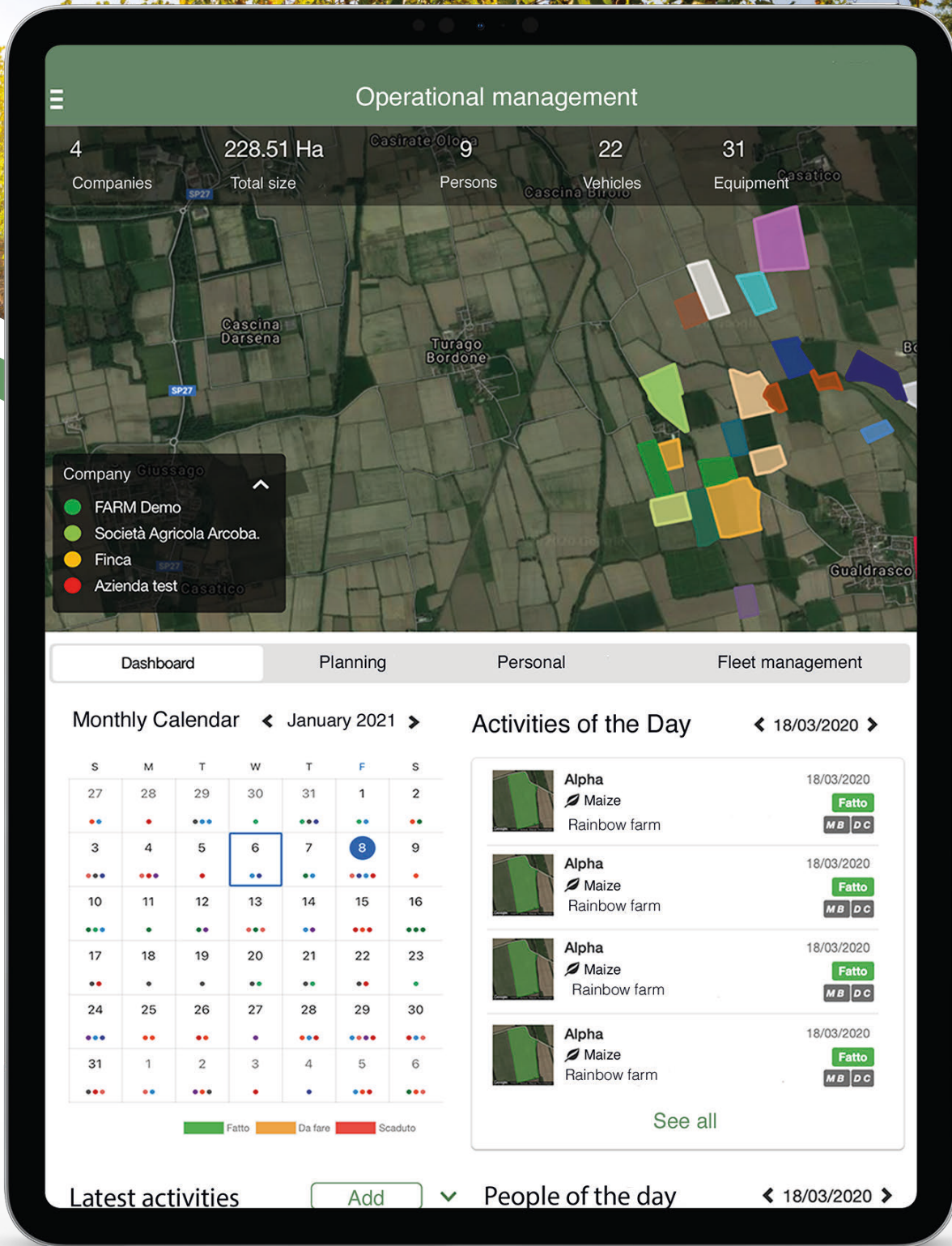
MULTI-COMPANY MANAGEMENT

Roles and hierarchies to control access to information

The xFarm digital ecosystem provides the possibility to assign and organise accounts and users in an orderly and flexible manner:
- Using roles, it is possible to identify for each user which functions can be used, displayed or hidden
- Using multi-farm management, it is possible to create a visualisation hierarchy between different levels of the supply chain, limiting, for example, the farms seen by a technician or a storage centre

CONTROLS

Quickly verify compliance with specifications

With Controls, it is possible to view a summary of the farms' activities, to verify that they have been carried out according to production specifications and regulations.

SEED Seeds and timing	**NUTRITION** Nitrates and NPK inputs	**DEFENCE** Products and dosages	**COLLECT** Quality parameters

Overview and detail

With Controls, you can monitor individual farms, viewing total and average values of the different categories, or you can go into detail on individual fields, verifying that each individual operation has been performed correctly.

Registration No.
12482

Product
LUMAX

Active substances
TERBUTILAZINA - TERBUTHYLAZINE
MESOTRIONE
S-METOLACLOR

Content
TERBUTILAZINA - TERBUTHYLAZINE
16,94 %
MESOTRIONE 3,39 %

How it works

Controls summarises in maps and tables all the details of the activities carried out on the fields. Activities are recorded by farmers and agronomists directly in the xFarm app and are then shared with the supply chain's xFarm Analytics account.

They are available:

- Tracking sowing and seed dates
- Summaries on the use of plant protection products, dosages and number of applications per active ingredient
- Calculation of NPK units applied
- Harvest quality parameters such as moisture, sugar content, pH and more

Maximum flexibility

With the increasing quest for product differentiation, the agri-food industry is increasingly implementing specific specifications for its supply chain, in addition to EU, national, regional and local ones.

For this Controlli was developed as an information summary centre, so as to facilitate the analysis stages even in the case of customised specifications.

There are also a number of settings to vary the way the system performs calculations, customising the fertilisation efficiency coefficients, for example.
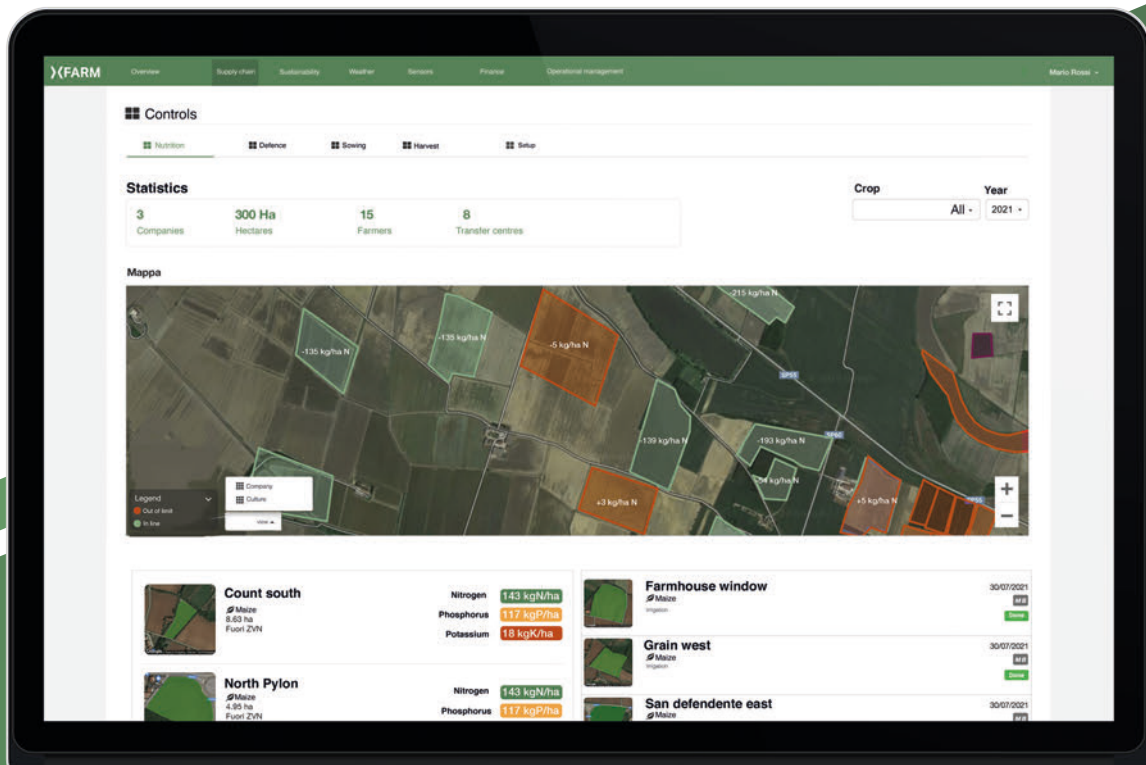
TRACKABILITY

Tell and certify your products, right from the field

With xFarm's Traceability feature you can couple the management benefits of Smart Farming with the value of information, showing consumers and certifiers the production process of raw materials.

Much more than logistics

With xFarm, all tracked information can be linked to specific batches, so that a digital product history can be recreated. From the producer's details, to the operations carried out in the field, the specific environmental impact, to the images taken by the webcams installed on the xFarm sensors. With all this information, xFarm traceability can be adapted to dozens of purposes, from certification to marketing.

The xFarm value

The use of xFarm traceability provides access to three major benefits that are difficult to find with other platforms:

- The amount of data available is very important, thanks to the coupling of Farm Management functions with data collection functions

- The simple and intuitive user experience of xFarm allows farmers and agronomists to compile data directly, without the use of external, complex systems

- **Integration with farm machinery telemetry and IoT sensors** enables the collection of objective information, without human intermediaries.

Data export

All data are contained in the xFarm Digital Passport, which can be downloaded manually or sent automatically. Thanks to this last option, it is possible to integrate xFarm's Digital Passport into blockchain securitisation systems, thus ensuring the absence of human intervention and consequently its transparency.

DIGITAL PASSPORT
The agricultural passport of raw materials

The Digital Passport is a standardised package of information that analytically narrates the product. A single document encodes all the processes carried out, the origin, meteorology, logistics and processing involved in a product.

Transformation

Add transformation information

With xFarm, you also have single-subject portals in which you can record processing activities, link production batches to processes and manage traceability with the typicality of the individual supply chain.

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www.xfarm.ag

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