Digital Agriculture

XFARM

Smart Farming

Smart Farming represents the application of modern Information and Communication Technologies (ICT) into agriculture, leading to what can be called a Third Green Revolution.

Following the plant breeding and genetics revolutions, this Third Green Revolution is taking over the agricultural world based upon the combined application of ICT solutions such as precision equipment, the Internet of Things (IoT), sensors and actuators, geo-positioning systems, Big Data, Unmanned Aerial Vehicles (UAVs, drones), robotics, etc.

Reference
https://www.smart-akis.com/index.php/network/what-is-smart-farming/

Smart Farming

XFARM

Smart Farming

Satellites and UAVs

Smart Farming

Satellites and UAVs

IoT and real time sensors

Smart Farming

XFARM

Satellites and UAVs

Georeferenced chemical analysis

IoT and real time sensors

Smart Farming

XFARM

Satellites and UAVs

Georeferenced chemical analysis

IoT and real time sensors

Tracking of agricultural practices

Smart Farming

Satellites and UAVs

Georeferenced chemical analysis

Farmers’ and agronomists’ feedback

Tracking of agricultural practices

IoT and real time sensors

1%

Digitized agricultural land in Italy

Reference 2018
osservatori.net

XFARM

Agriculture
1.0

‘50

Agriculture
1.0

Agriculture
2.0

Mechanization
Green revolution

‘90

‘50

Agriculture
1.0

Agriculture
2.0

Mechanization
Green revolution

Agriculture
3.0

Precision Farming
Sustainability

Today

‘90

‘50

Agriculture
1.0

Agriculture
2.0

Mechanization
Green revolution

Agriculture
3.0

Precision Farming
Sustainability

Agriculture
4.0

IoT
Big Data
Traceability

The process

The process

Data collection

Supply chain and agricultural practices

IoT devices and sensors

Satellites and UAVs images

Soil Analysis

Historical data

...

The process

Data collection

Supply chain and agricultural practices

IoT devices and sensors

Satellites and UAVs images

Soil Analysis

Historical data

...

Processing

Forecasting Models

GIS

Statistical analysis

Machine learning

The process

Data collection

Supply chain and agricultural practices

IoT devices and sensors

Satellites and UAVs images

Soil Analysis

Historical data

...

Processing

Forecasting Models

GIS

Statistical analysis

Machine learning

Utilization

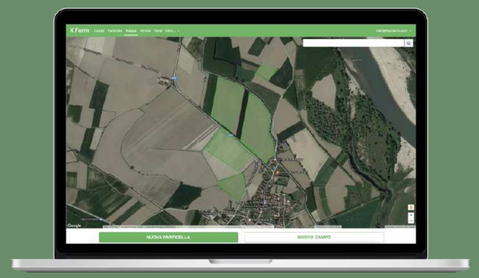
Variable Rate Technology

Irrigation optimization

Alerts and DSS

Data collection

Farm management system



+

IoT Sensors

+

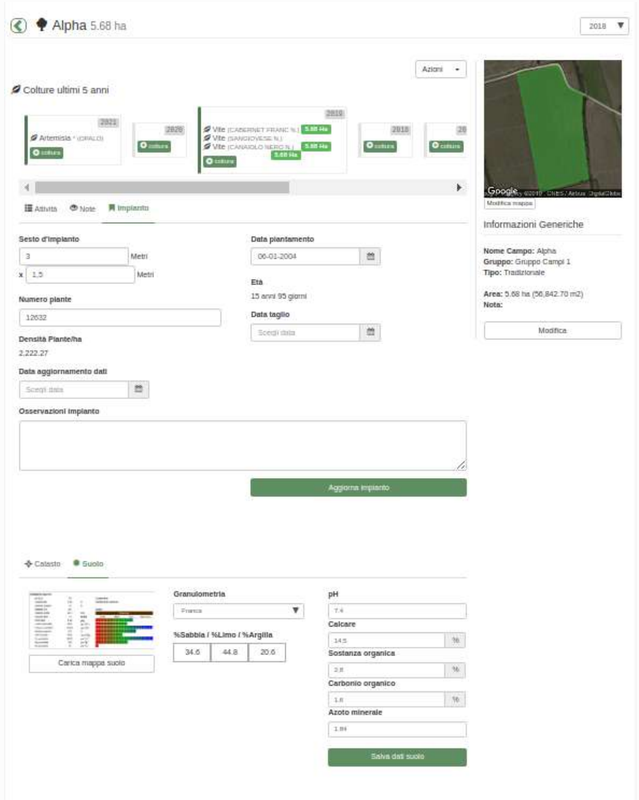
Weather **Satellites**

Machines

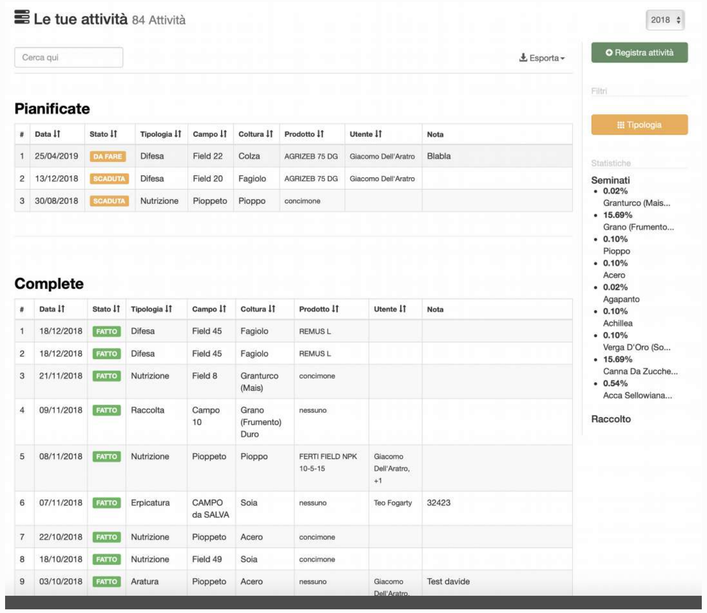
Farm management system

Maps

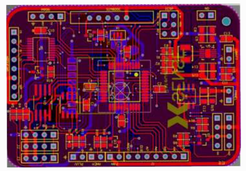
Fields

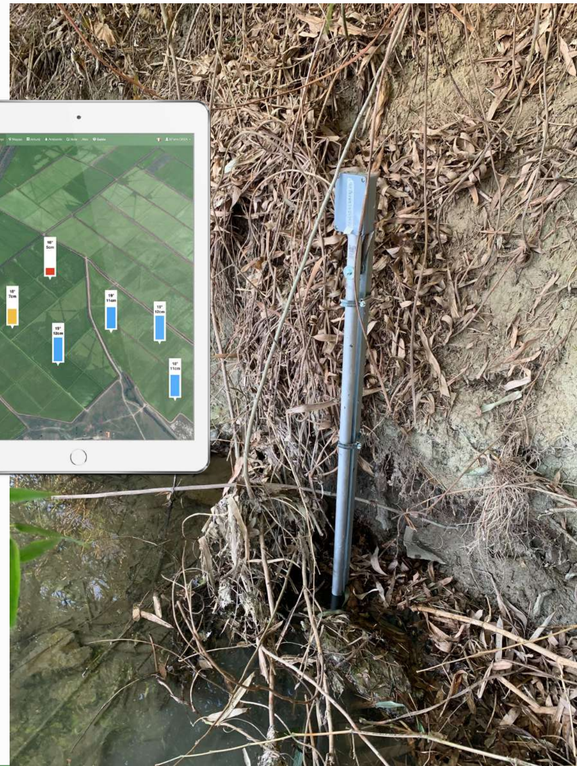


Activities



IoT sensors

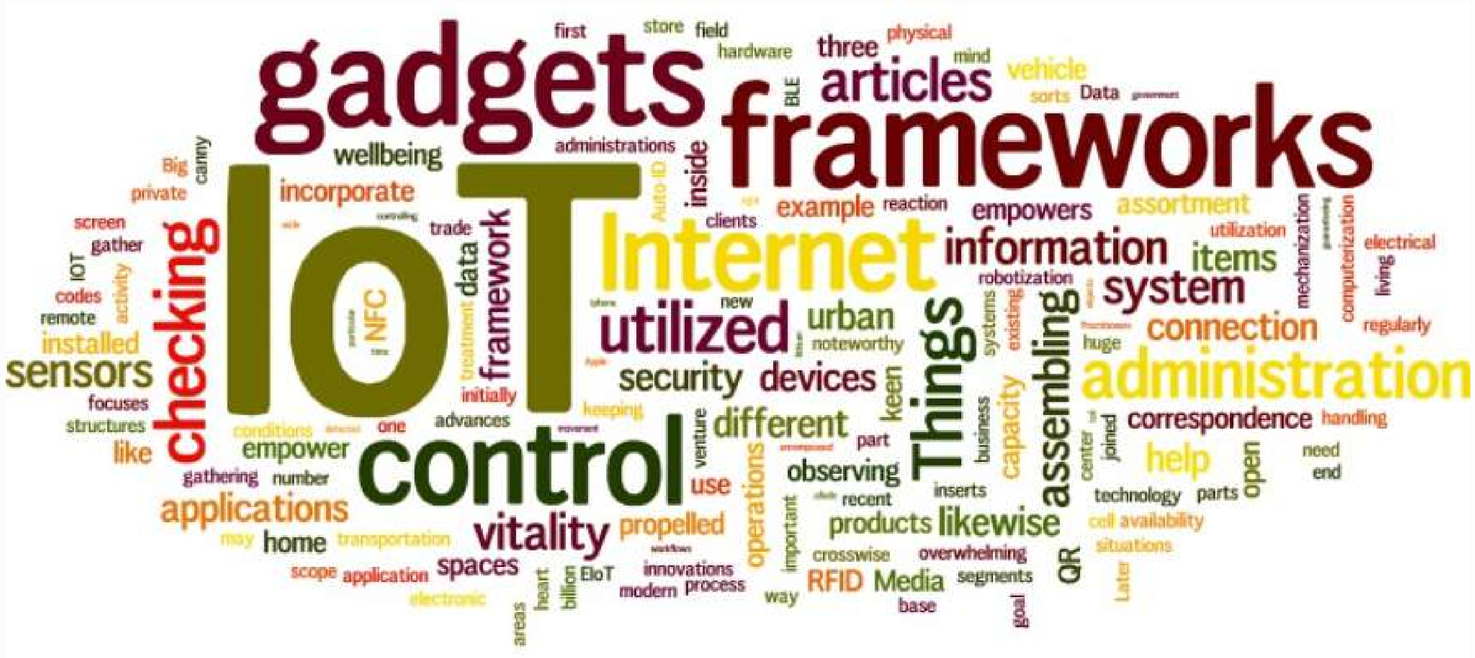




Internet of Things: IoT

The Internet of Things (IoT) is a novel paradigm that is rapidly gaining ground in the scenario of modern wireless telecommunications. The basic idea of this concept is the pervasive presence around us of a variety of things or objects – such as Radio-Frequency IDentification (RFID) tags, sensors, actuators, mobile phones, etc. – which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals

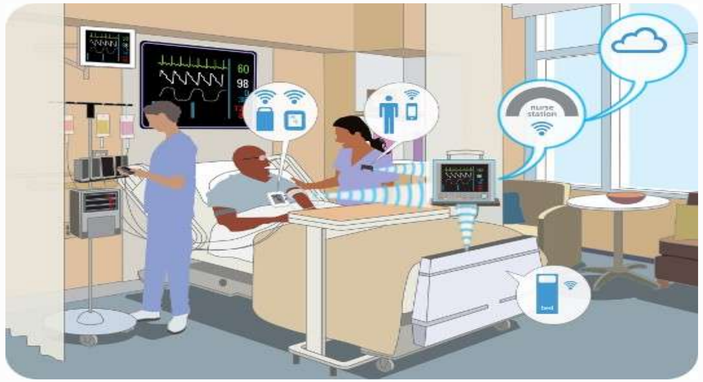
D. Giusto, A. Iera, G. Morabito, L. Atzori (Eds.), The Internet of Things, Springer, 2010. ISBN: 978-1-4419-1673-0.



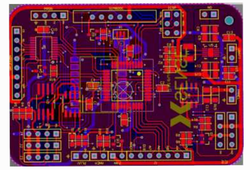
Household appliances

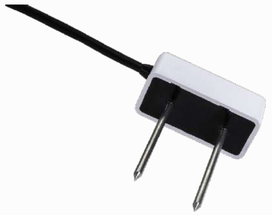
Wearables

Healthcare



Agriculture



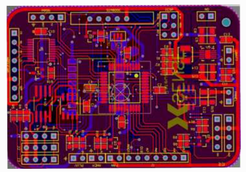


Weather station xSense

xSense is a weather station and also an Internet of Things (IoT) device that communicates via LoRa with xNode IoT devices and via GSM with xFarm's cloud, providing real-time field data

IoT xNode

xNode is a module that collects data from different analog and digital sensors and synchronizes with xSense using LoRa technology and xFarm pairing technology.



LoRa™

GSM

Soil sensors

Leaf Wetness sensors

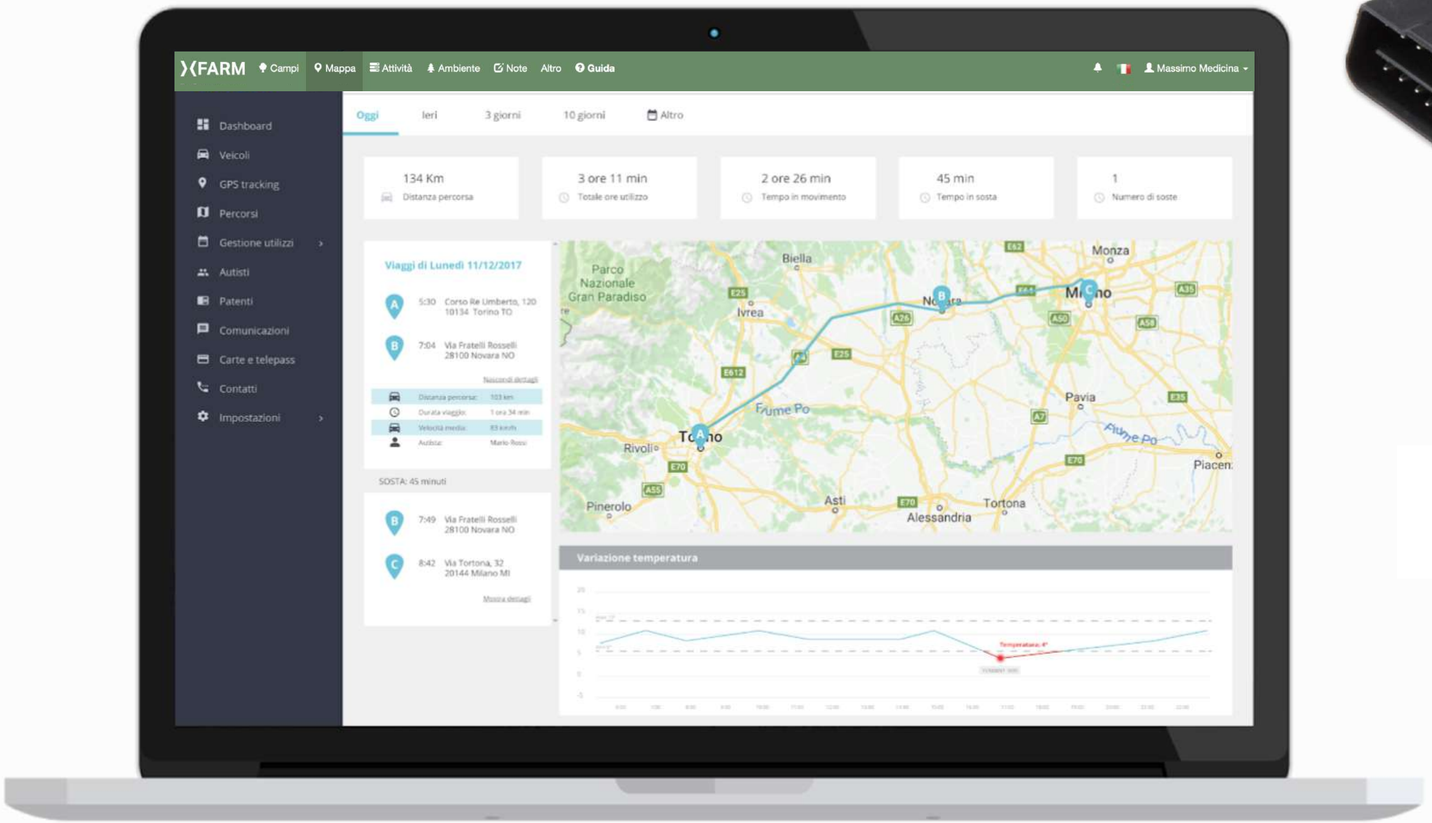
Pyranometers

Satellites

Imagery from Sentinel2

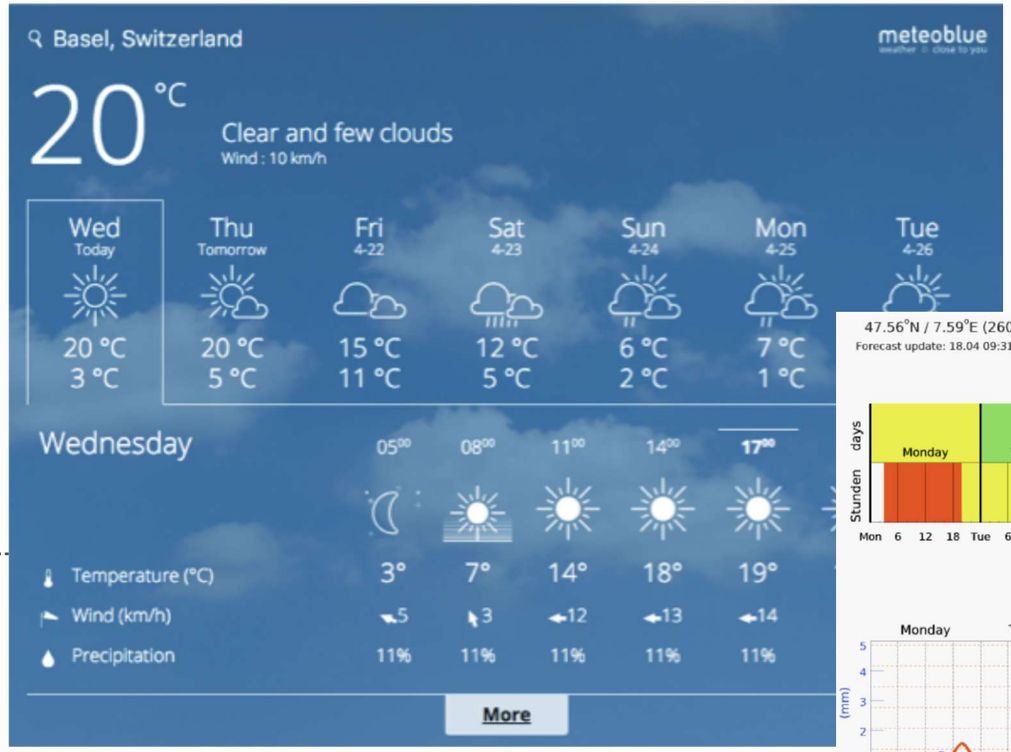
Tractor data

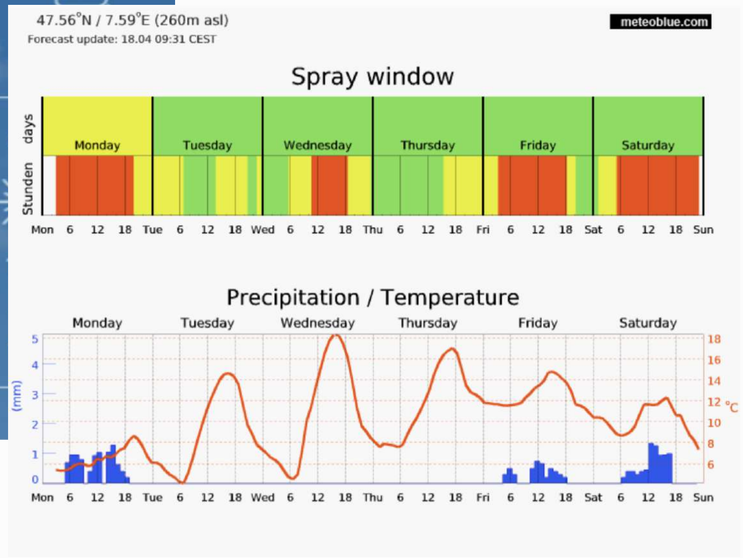
Using CAN-bus standard



Professional Weather service

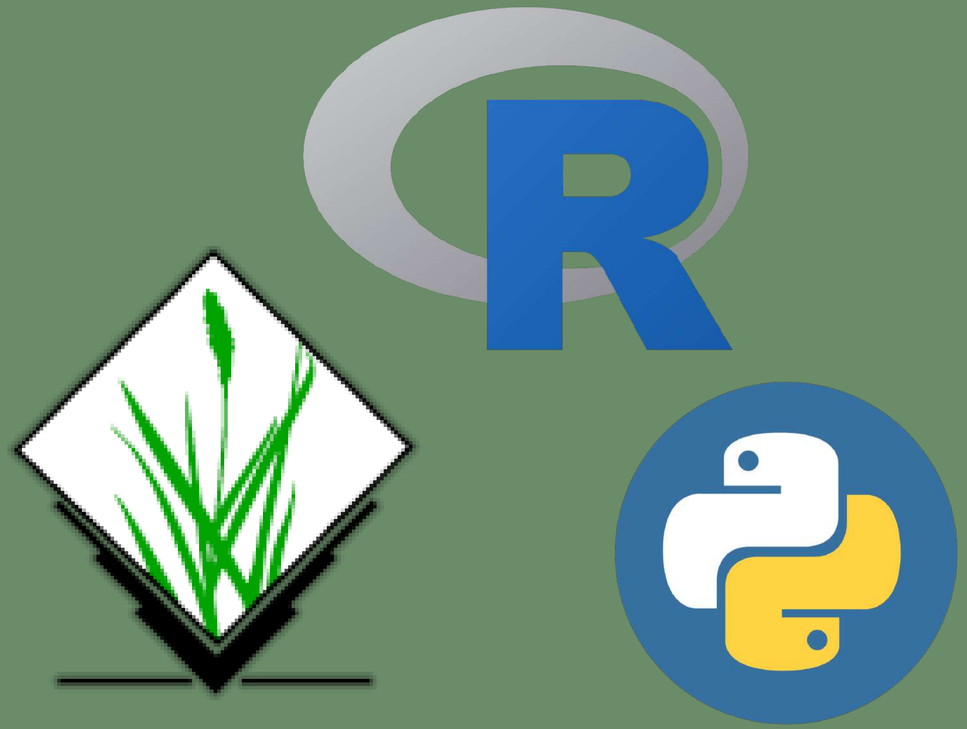
Weather data



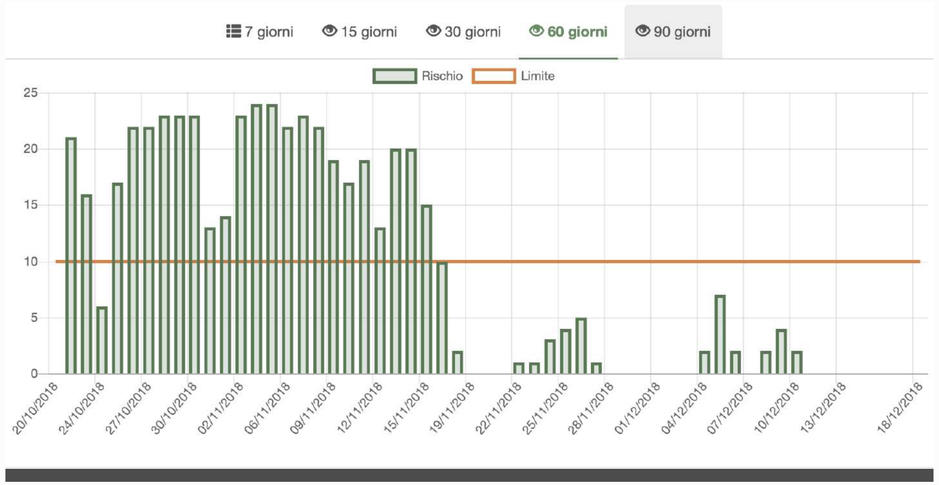


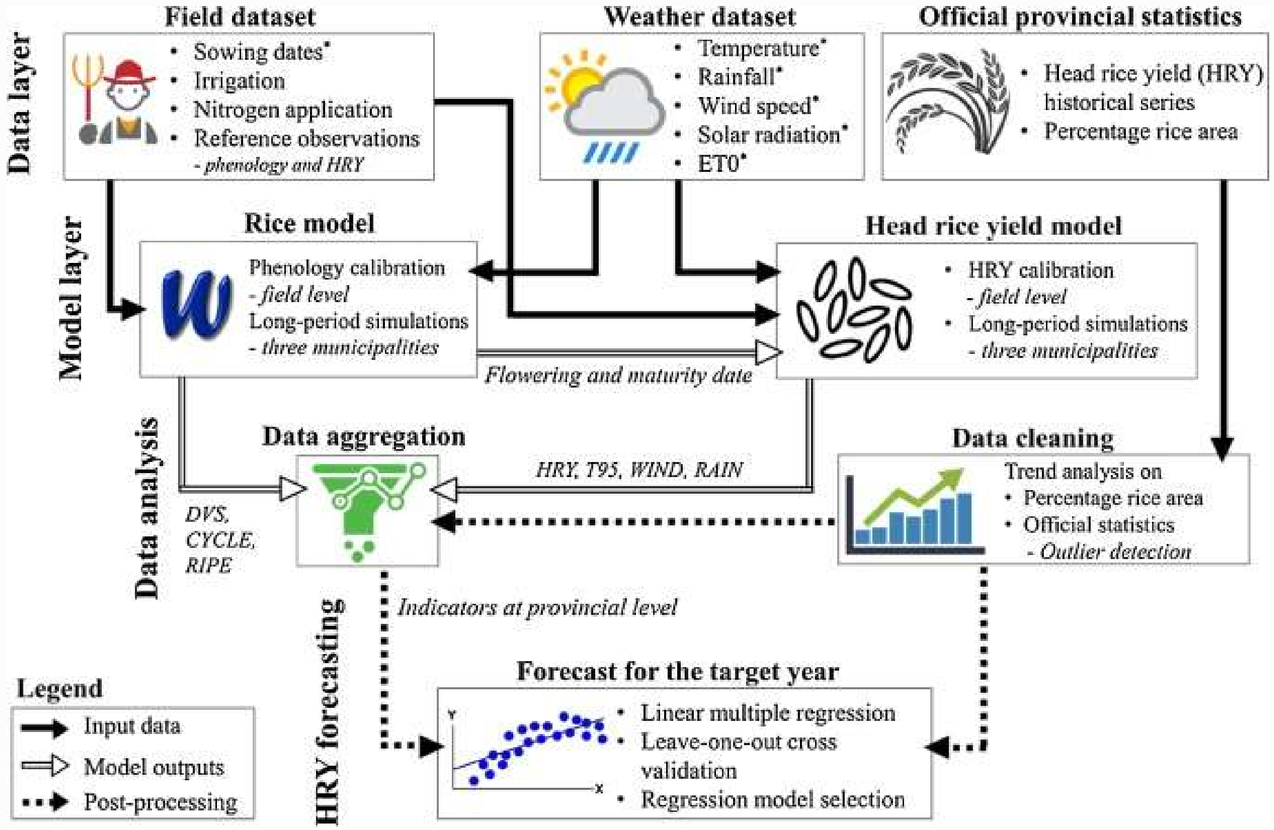
FARM

Data Processing



Forecasting models

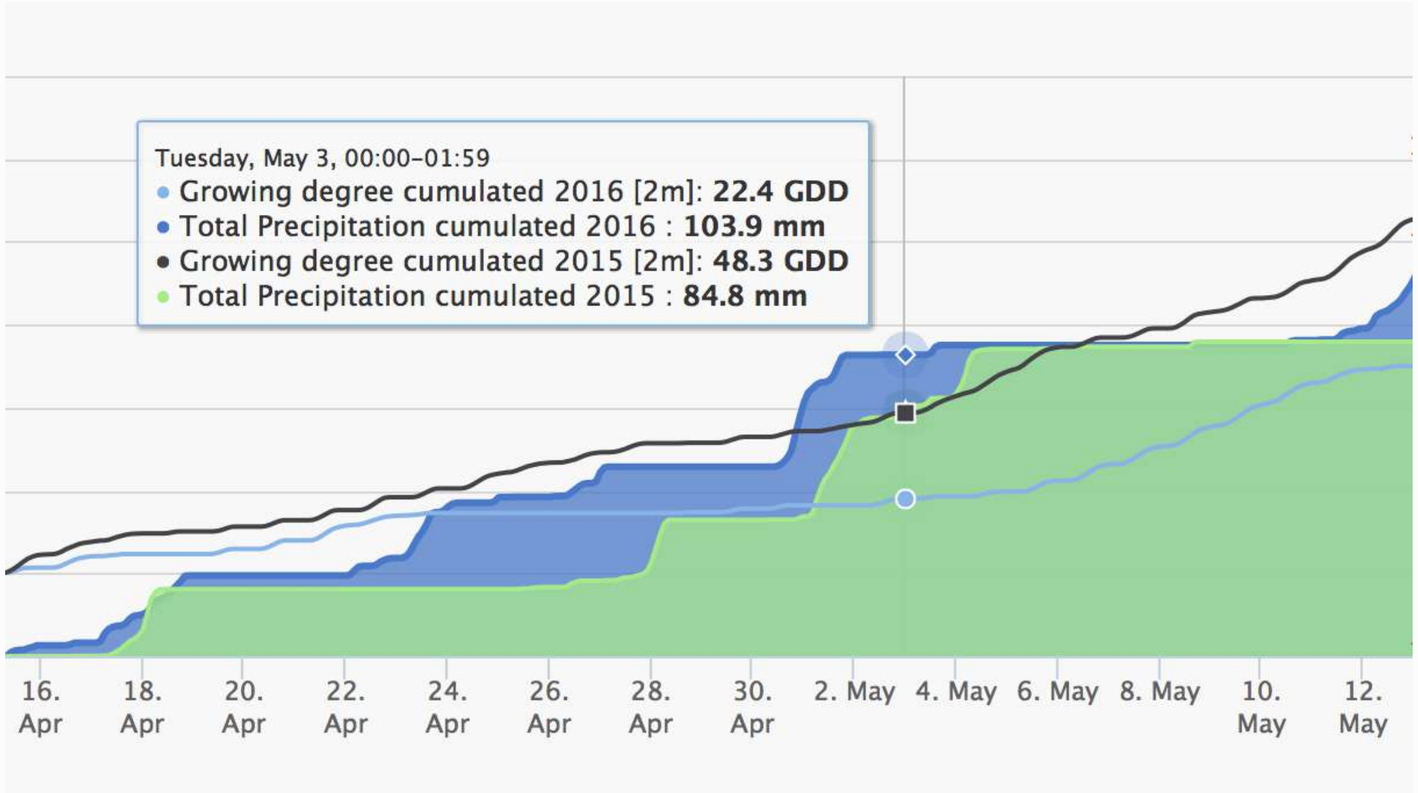




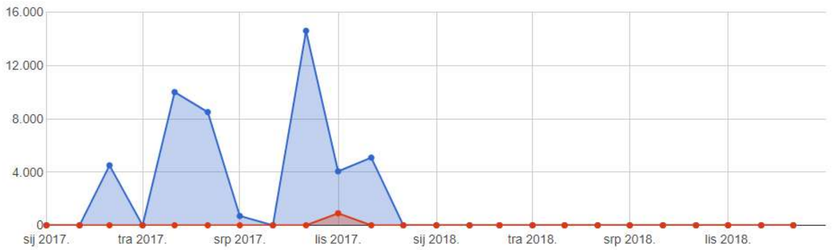
Reference

Cappelli, G., Pagani, V., Zanzi, A., Confalonieri, R., Romani, M., Feccia, S., ... & Bregaglio, S. (2018). GLORIFY: A new forecasting system for rice grain quality in Northern Italy. European Journal of Agronomy, 97, 70-80.

Historical Data analysis



Fertilizer usage



Usage per item

Name↓	Kg	L
Fertigofol Ultra	0	900
KAN 27% (Borealis)	4,050	0
NPK 20-10-10	32,600	0

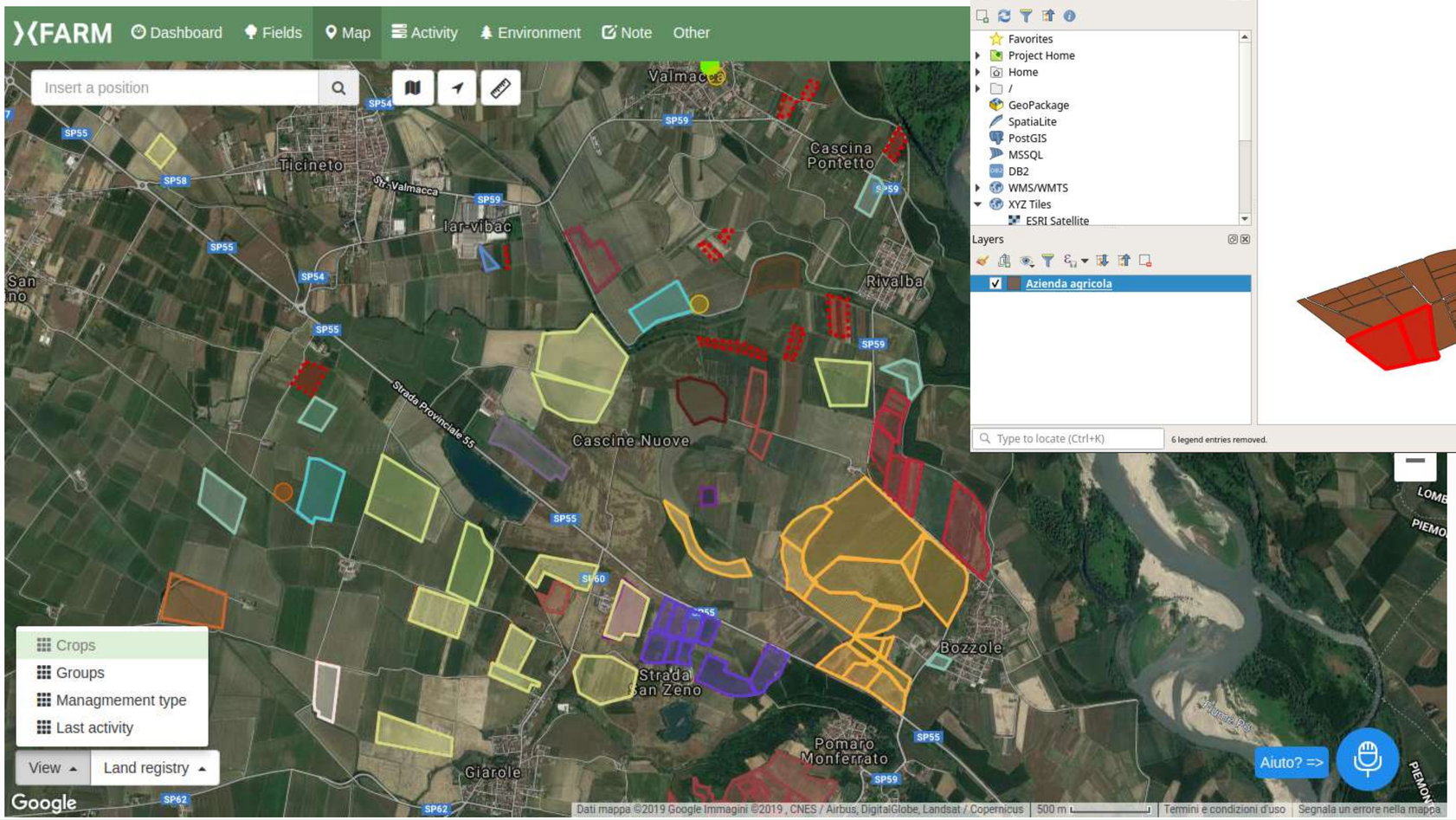
Usage per crop production

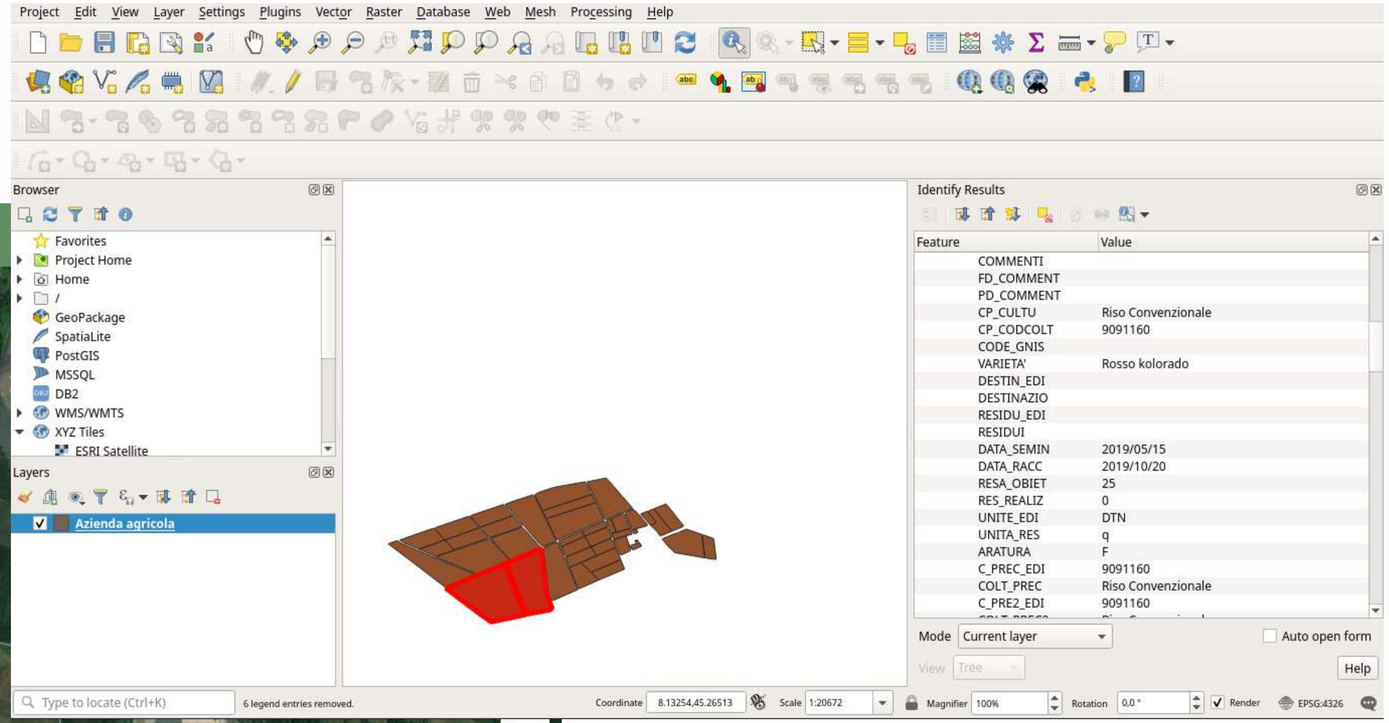
Name↓	Kg	L
Barley	10,700	0
Corn	13,000	0
Wheat	23,730	900

Usage per field

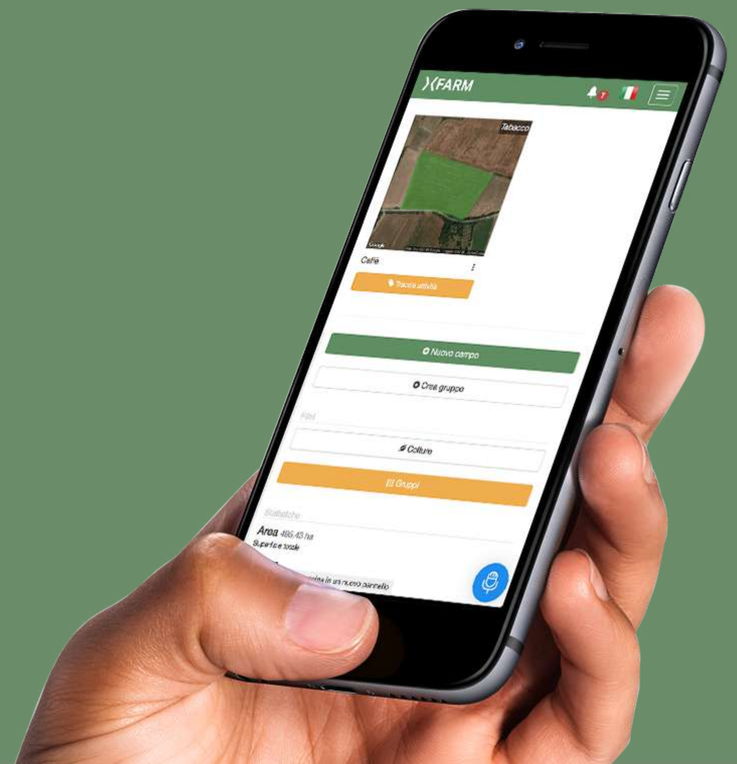
Name↓	Kg	L
Barley 1	2,500	0
Barley 2	5,200	0
Barley 3	3,000	0

Agronomic analysis

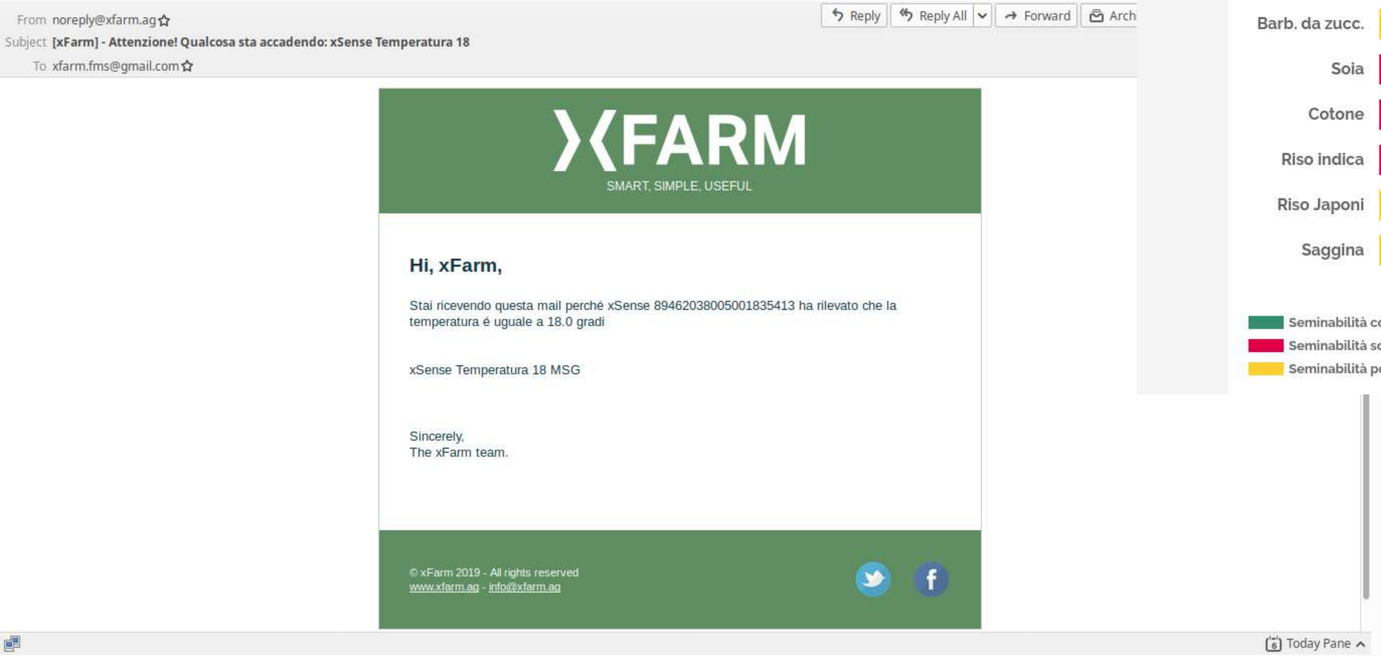


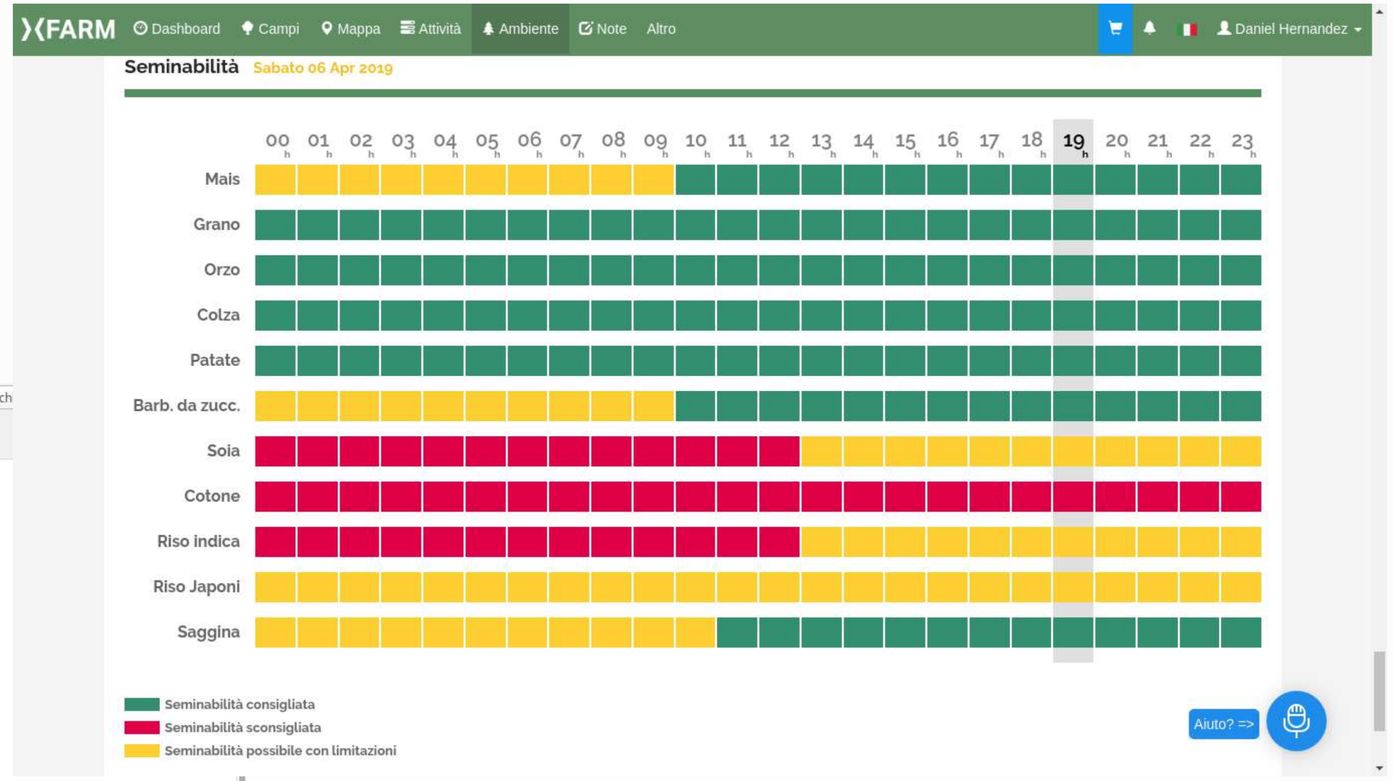


Utilization

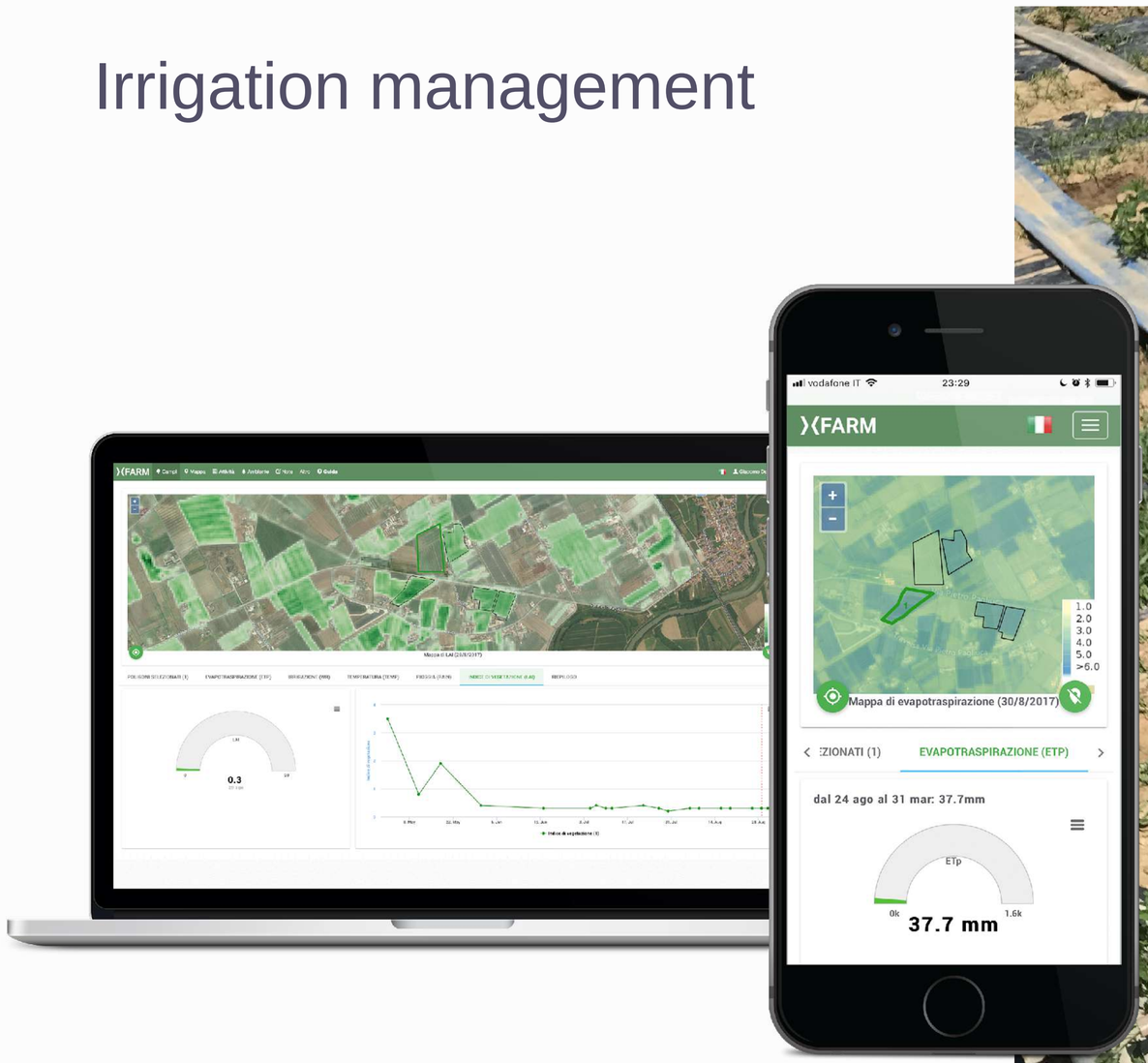


Alerts and DSS

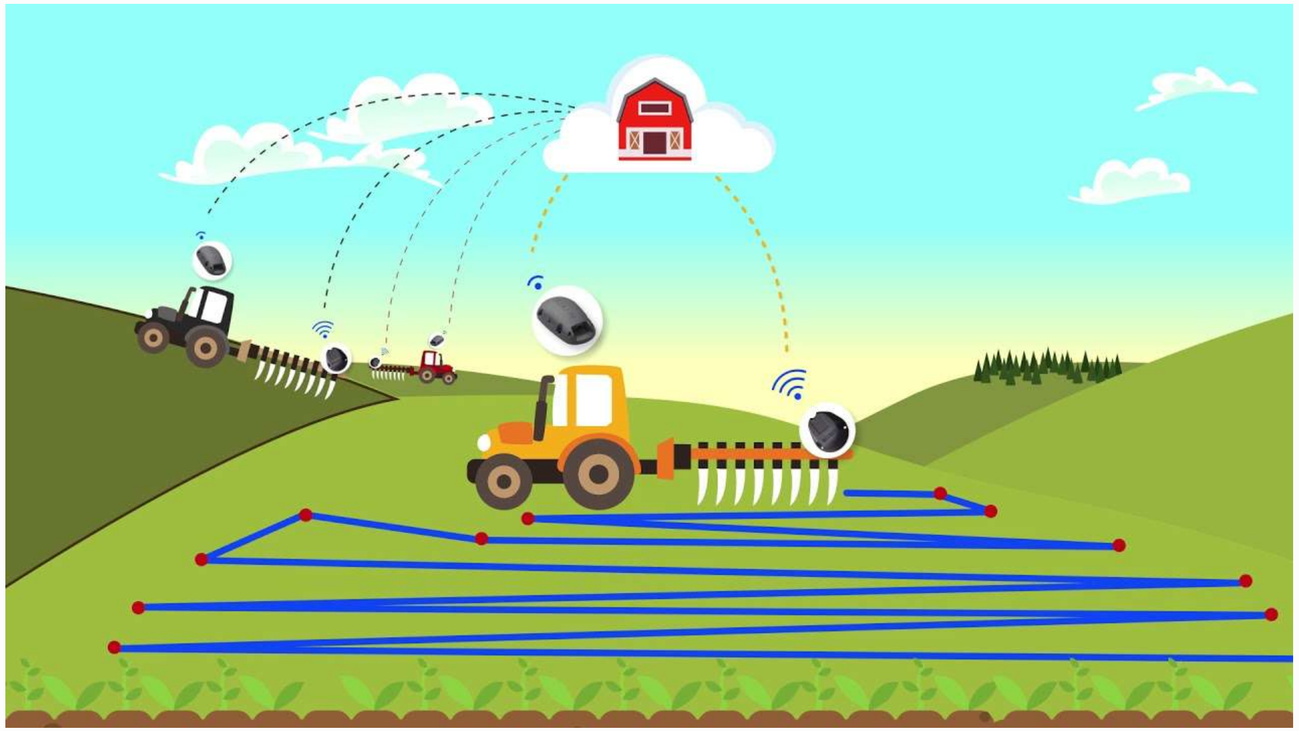




Irrigation management



Variable Rate technology



Traceability

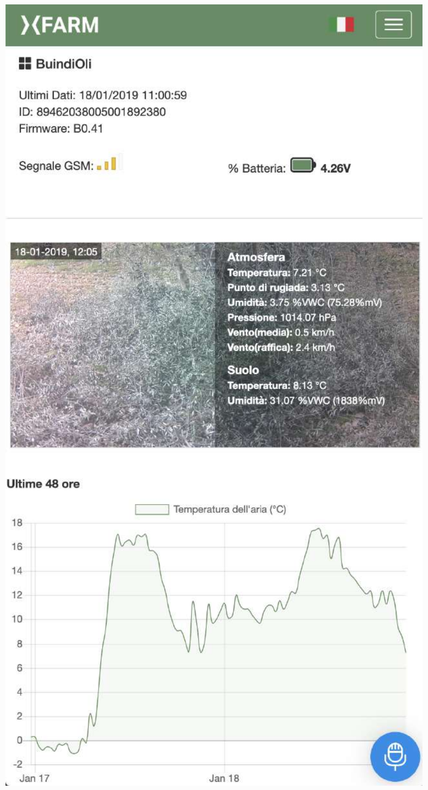
Where is the food coming from?
Who did grow it?
Under what environmental conditions?
Who did transform it?
How did it reach the shelf?

Rice

IL TUO RISO
Qui trovi il codice da inserire qui sotto per scoprire le origini del prodotto e accedere a contenuti esclusivi
Inserisci il codice della confezi
Ad esempio il codice RCBAAEA
SCOPRI IL TUO RISO
100 % CARNAROLI
ANOTTI.COM/RCBAAEA
FRATELLI
RISO CARNAROLI
18 MIN
NET WT 22 LB
1000g

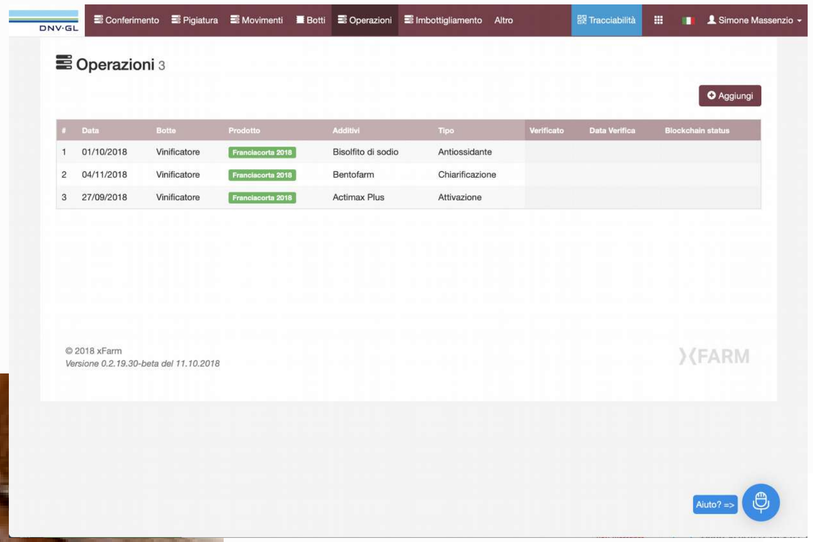
DOVE LO COLTIVIAMO
In Italia la coltivazione del riso è concentrata principalmente in bassa padana e nella stretta fascia fino alle prealpi tra Lombardia e Piemonte. Noi ci troviamo nella parte più sud dell'area di coltivazione in Piemonte e le nostre risaie sono abbracciate dal fiume Po. Le risaie creano una scacchiera di specchi d'acqua che caratterizzano il paesaggio e disegnano le linee della pianura.
La zona delle risaie dal punto di vista naturalistico è importantissima perché ospita una buona parte della popolazione europea di aironi e di altre specie di uccelli migratori e stanziali, che trovano nelle distese allagate in primavera e in estate un perfetto habitat di caccia, di sosta o di ni-dificazione.
F.lli VANOTTI
PROVA A CAMMINARE RISAIE
SELEZIONA STAGIONE
Meteo attuale
28.7°
Temperatura
54%
Umidità
1.5km/h
Vento
LIVE
RISAIA LE MOTTE
IL RACCOLTO
Risotto con gli asparagi
milanese
RISO CARNAROLI
CARNAROLI
LOTTO:
11456
PRODUZIONE:
2015
SCADENZA:
01/07/18
SEMINATO:
26/04/15
RACCOLTO:
18/09/15
CONFEZIONATO:
14/07/16
COLTIVATO DA:
Igor Chiodo
Passione per la natura e tutti i suoi derivati. Responsabile operativo per la coltivazion del riso.
NELLA RISAIA:
Le motte
Risaia Le Motte
FARM

Olive oil


XFARM
BuindiOli
Ultimi Dati: 18/01/2019 11:00:59
ID: 89462038005001892380
Firmware: B0.41
Segnale GSM:
% Batteria: 4.26V
18-01-2019, 12:05
Atmosfera
Temperatura: 7.21 °C
Punto di rugiada: 3.13 °C
Umidità: 3.75 %VWC (75.28%mV)
Pressione: 1014.07 hPa
Vento(media): 0.5 km/h
Vento(raffica): 2.4 km/h
Suolo
Temperatura: 8.13 °C
Umidità: 31.07 %VWC (1838%mV)
Ultime 48 ore
Temperatura dell'aria (°C)
18
16
14
12
10
8
6
4
2
0
-2
Jan 17
Jan 18

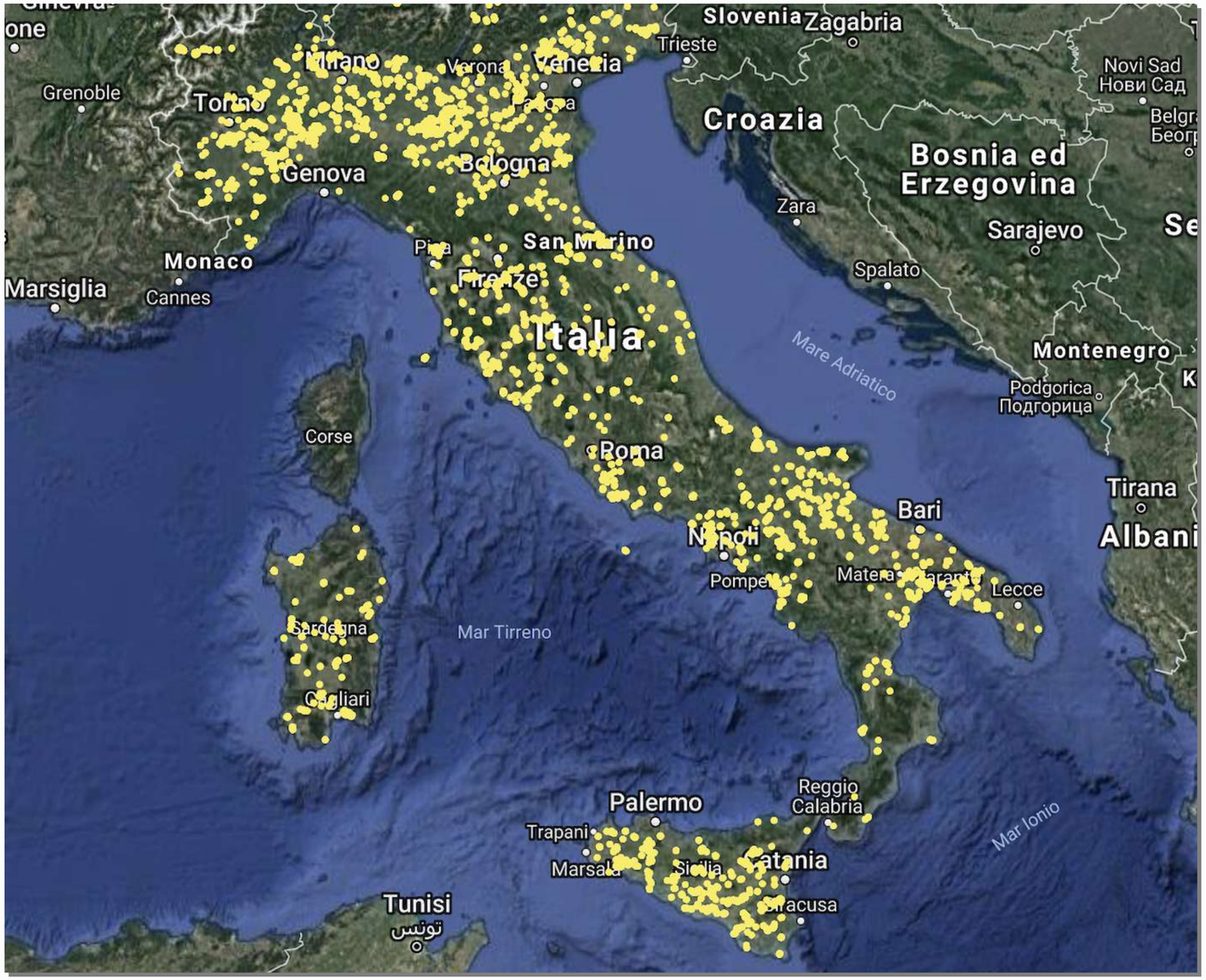
Olio
Extravergine
di Oliva
OGLIAROLA
GARGANICA
Buondì
BIOLOGICO

Wine


DNV·GL
Conferimento
Pigiatura
Movimenti
Botti
Operazioni
Imbottigliamento
Altro
Tracciabilità
Simone Massenzio
Operazioni 3
Aggiungi
Data Botte Prodotto Additivi Tipo Verificato Data Verifica Blockchain status
1 01/10/2018 Vinificatore Franciacorta 2018 Bisolfito di sodio Antiossidante
2 04/11/2018 Vinificatore Franciacorta 2018 Bentofarm Chiarificazione
3 27/09/2018 Vinificatore Franciacorta 2018 Actimax Plus Attivazione
© 2018 xFarm
Versione 0.2.19.30-beta del 11.10.2018
Aiuto? =>

RUFFINO
RISERVA DUCALE
Oro
CHIANTI CLASSICO
GRAN SELEZIONE
MY STORY™
VERIFIED BY
DNV·GL

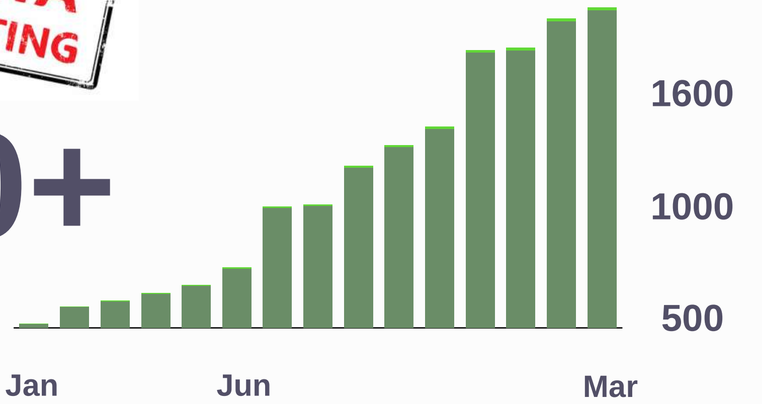
Developed with farmers



BETA TESTING

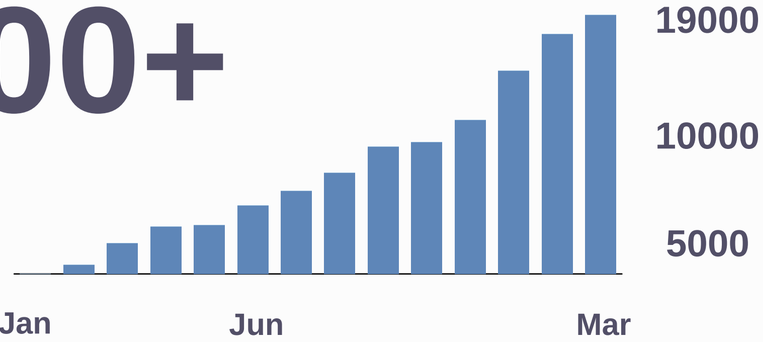
1900+

Farms



19000+

Hectares



THANK YOU

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