

SMART FARMING DECISION SUPPORT SYSTEMS

A KEY FACTOR FOR SUSTAINABILITY AND GROWTH IN AGRICULTURE

Dimitris Kapnias, Senior manager



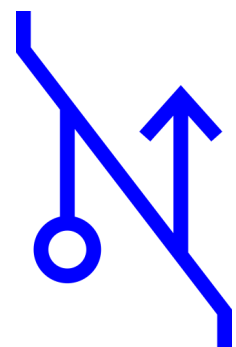
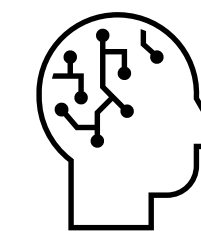
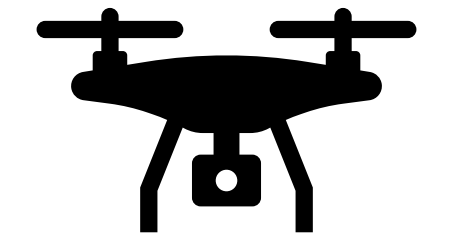
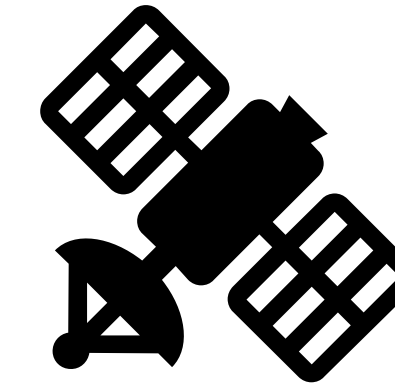
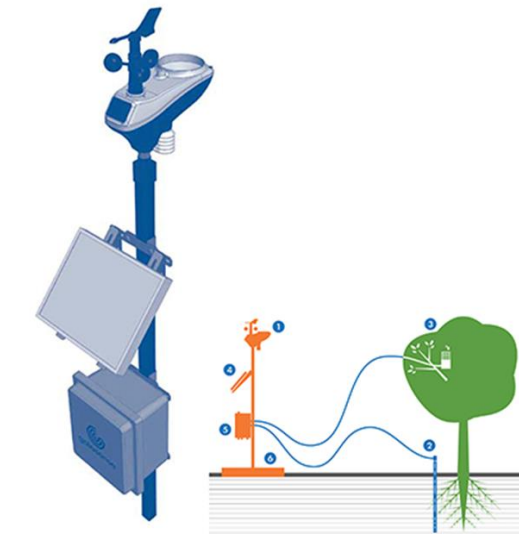
Smart farming

The hottest topic in agriculture

[ChatGPT] Smart farming, also known as **precision agriculture** or precision farming, refers to the use of advanced technologies, information, data analysis, and automation in agricultural practices. The primary goal of smart farming is to enhance the efficiency, productivity, and sustainability of agricultural production

[Copilot] Smart farming is the use of digital tools and technologies to **optimize complex farming systems**. It involves collecting, storing, analyzing, and sharing electronic data and information in agriculture. Smart farming can improve **productivity, efficiency, sustainability, and profitability** of agricultural systems.

[TechTarget] Smart farming is a **management concept** focused on providing the agricultural industry with the infrastructure to leverage advanced technology – including big data, the cloud and the internet of things (IoT) – **for tracking, monitoring, automating and analyzing operations**. Also known as precision agriculture, smart farming is software-managed and sensor-monitored.



Smart farming

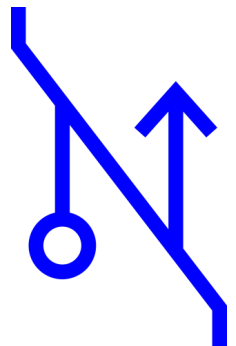
The hottest topic in agriculture

Why?

Farmers face multiple or even conflicting challenges

How?

There is no cookbook to follow, local conditions are of essential importance



The environment of the agricultural activity

Climate crisis

Increased exposure to natural disasters & imposition to restrictions in agricultural practices

Geopolitical tensions

Swift-changing markets

Less protection

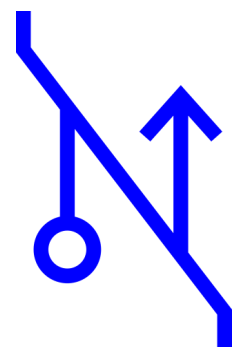
Competitive prices

Food safety

Safer and better-quality food

Food security

More food



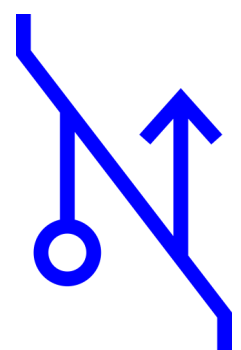


The environment of the agricultural activity

Farmers are asked to produce more, safer and better-quality food, at reduced cost, in swift - changing markets while being **increasingly** exposed to natural disasters and **imposed to restrictions and changes in their practices**



CAP horizontal goal: Digital transformation

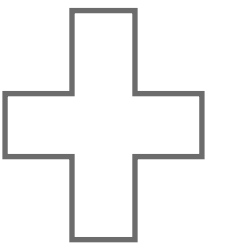


Smart farming is a key factor

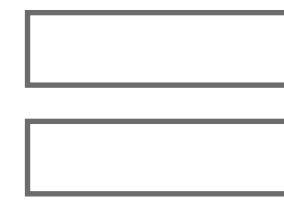
Economic sustainability
of agricultural holdings



Environmental sustainability
& climate protection



Digitization – Smart
farming



“More with less”

Big Data &
analytics

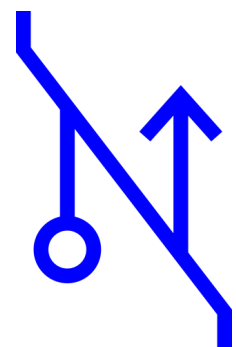
Artificial
Intelligence

Robotics

IoT &
Sensors

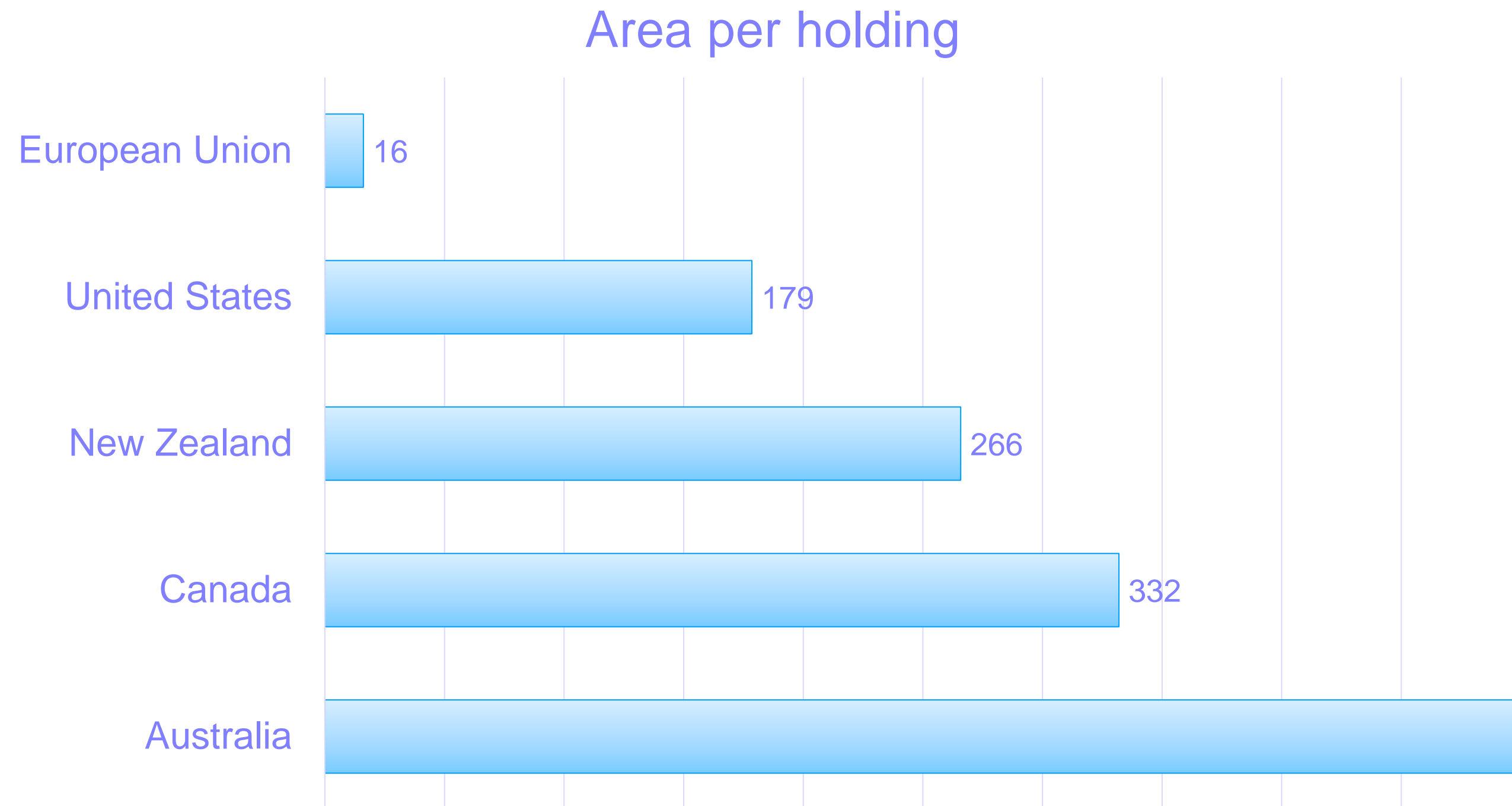
Remote
Sensing

Drones



Great variation

Tailor – made solutions needed



Terrain

Climate

Institutions

Soil

Size of fields

Infrastructures

Inputs

Size of holdings

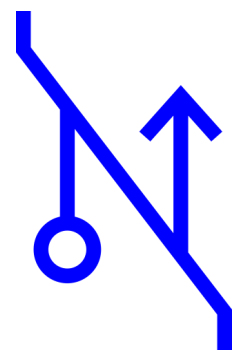
Irrigation

Training

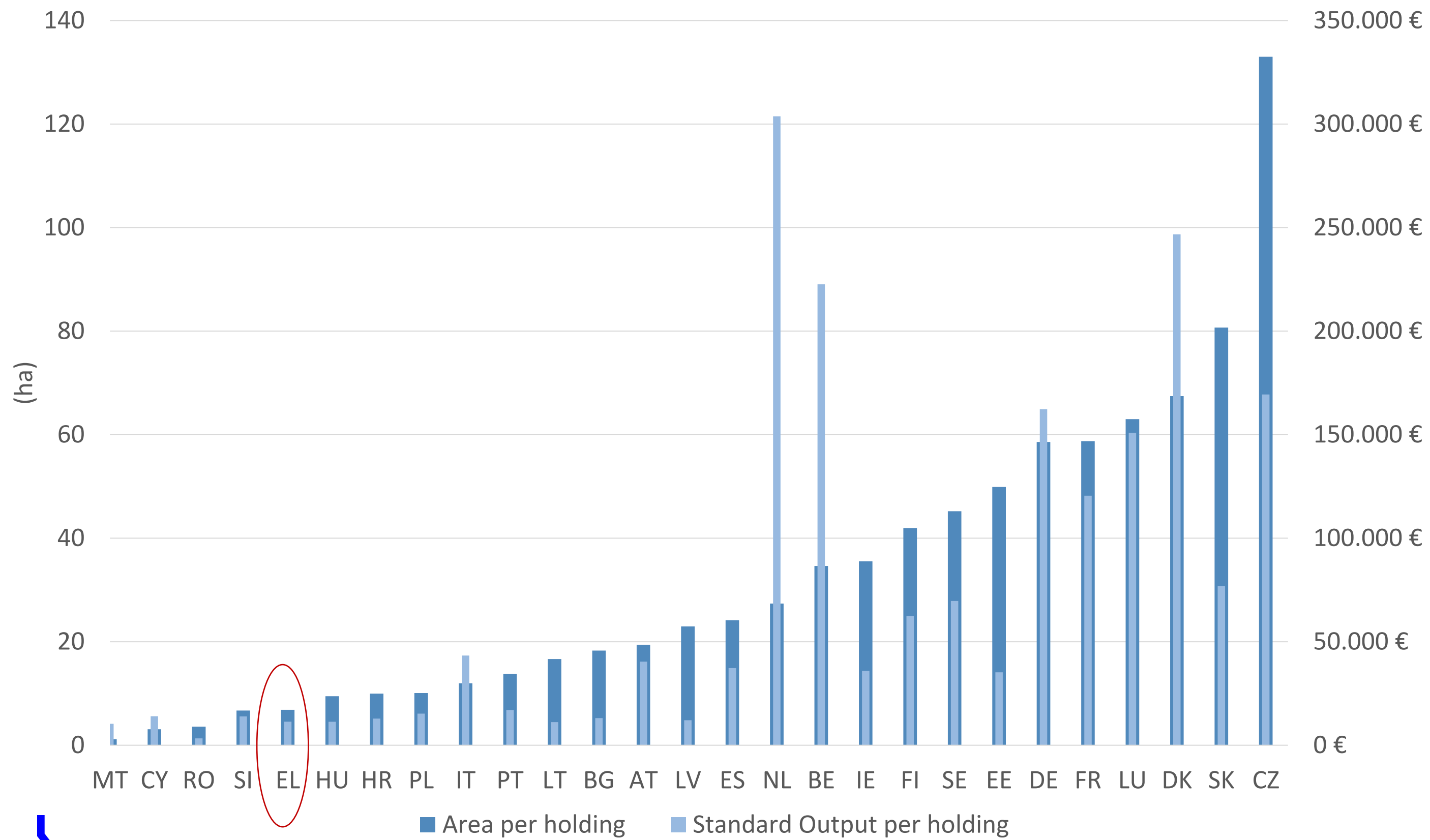
Credit

Markets

Machinery



The case of Greece



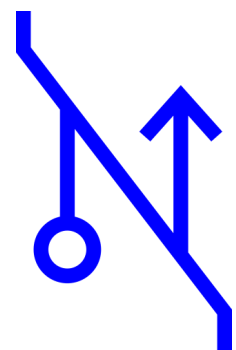
Small, family – owned farms

Small-size, dispersed fields

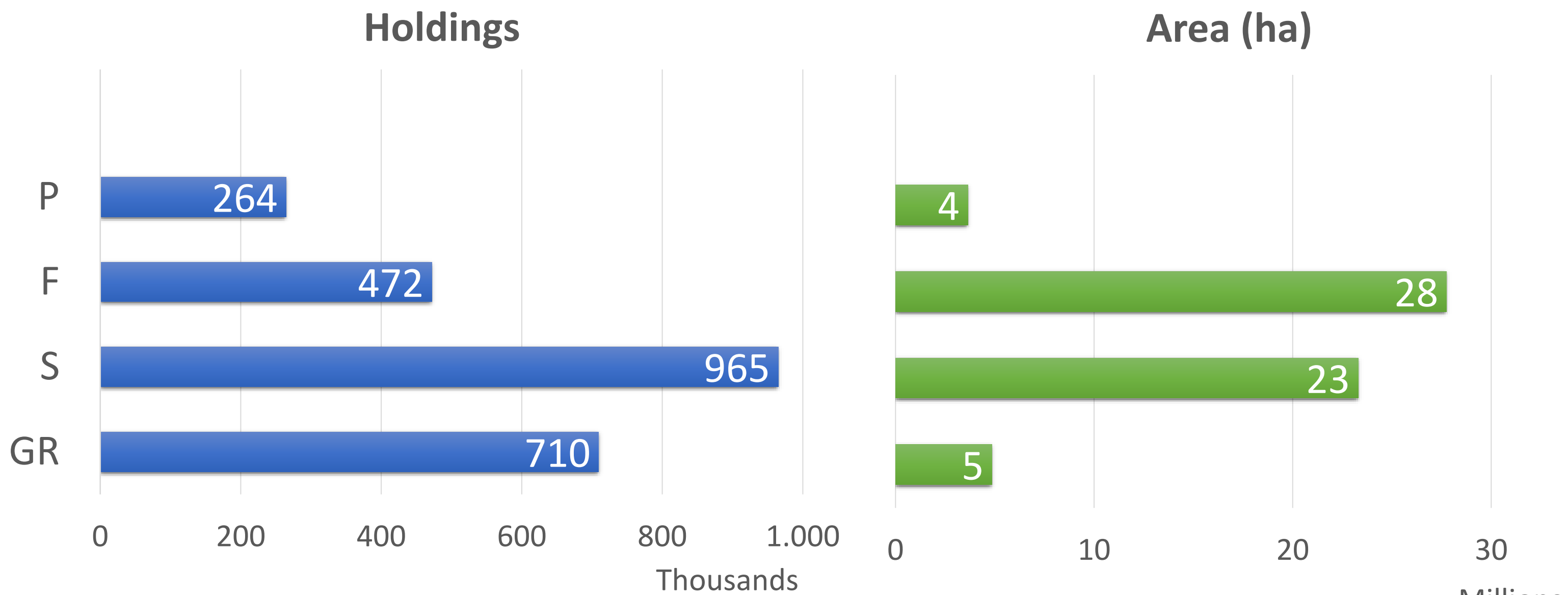
Very limited access to credit

Heavily depended on CAP subsidies

Heavily depended on inputs cost



The case of Greece



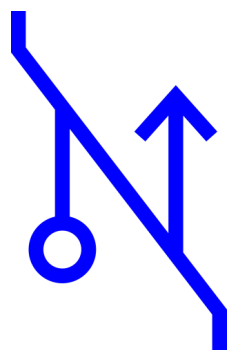
Small, family – owned farms

Small-size, dispersed fields

Very limited access to credit

Heavily depended on CAP subsidies

Heavily depended on inputs cost



Smart farming as a service

Encouraging co-operation
Consulting/ Support

Minimal/ No initial investment

Aligned/ integrated to CAP

DSS focused on rational use
fertilizers, pesticides, water

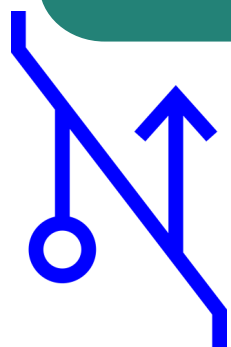
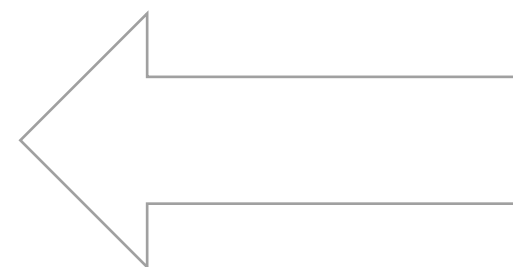
Small, family – owned farms

Small-size, dispersed fields

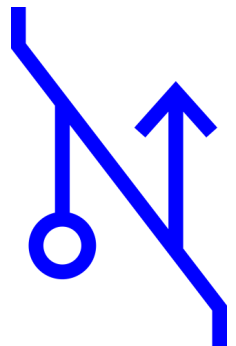
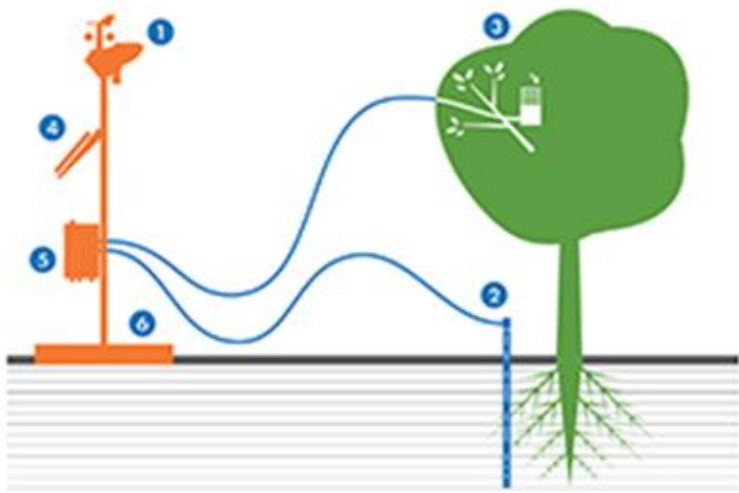
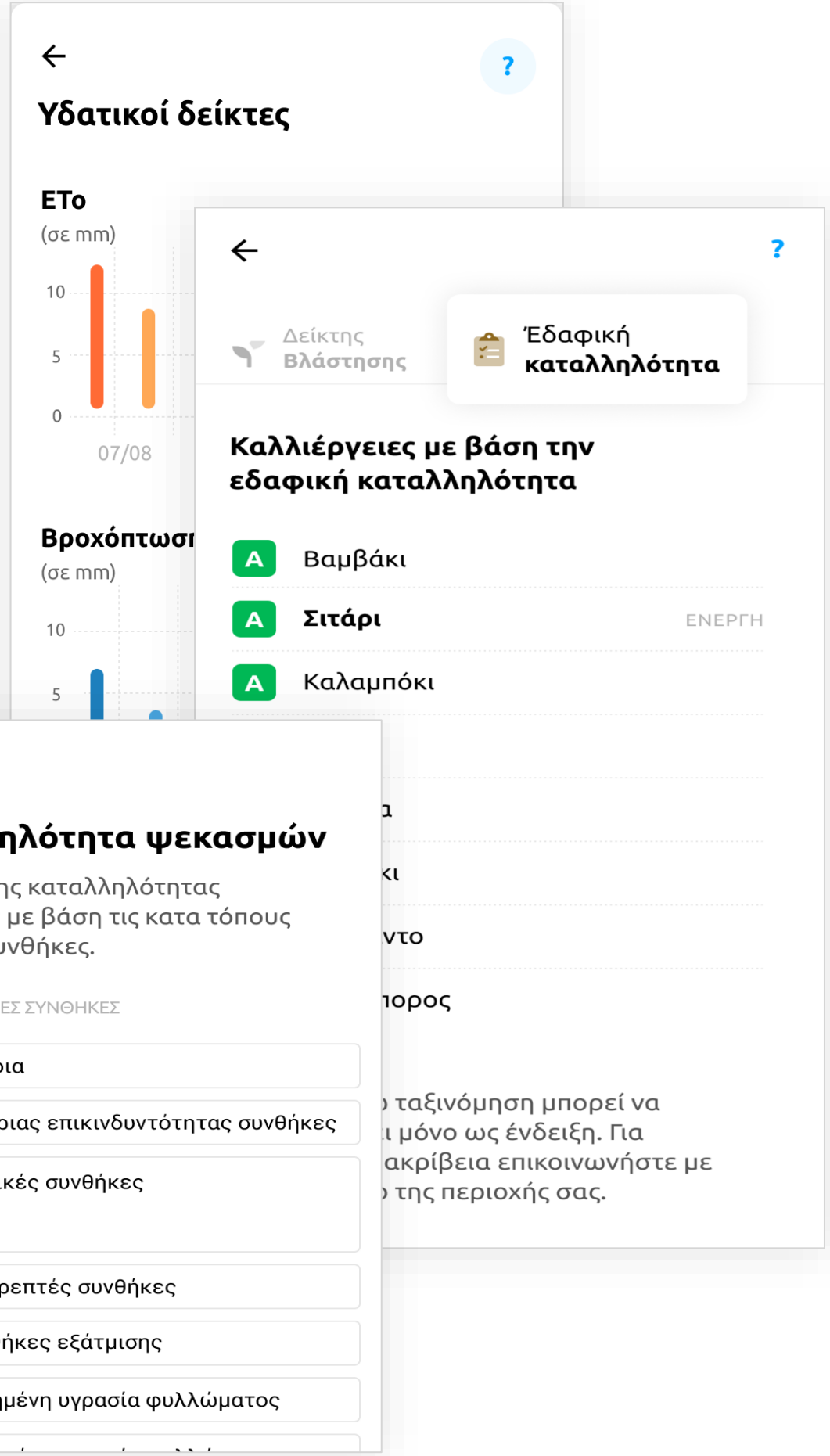
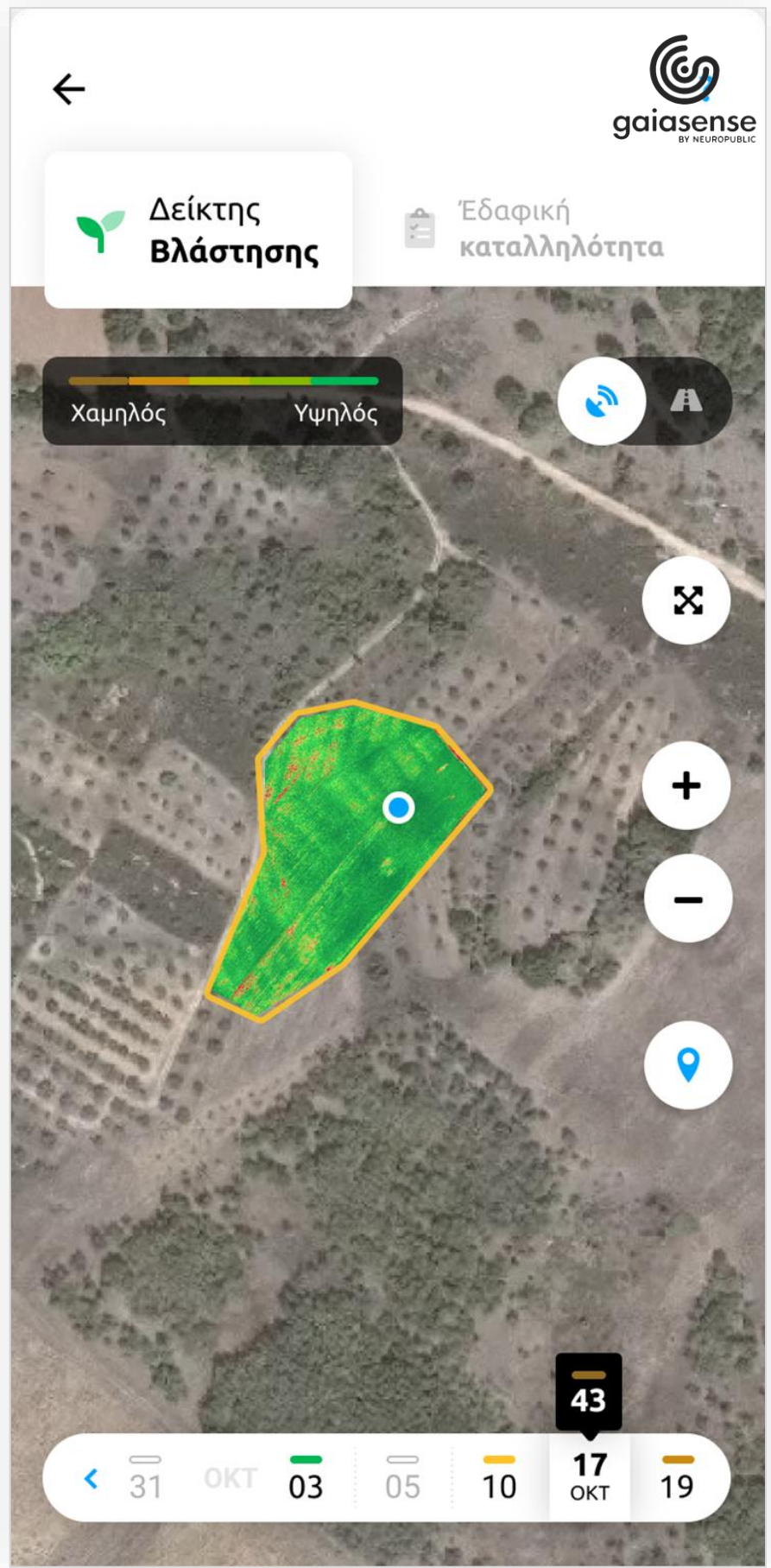
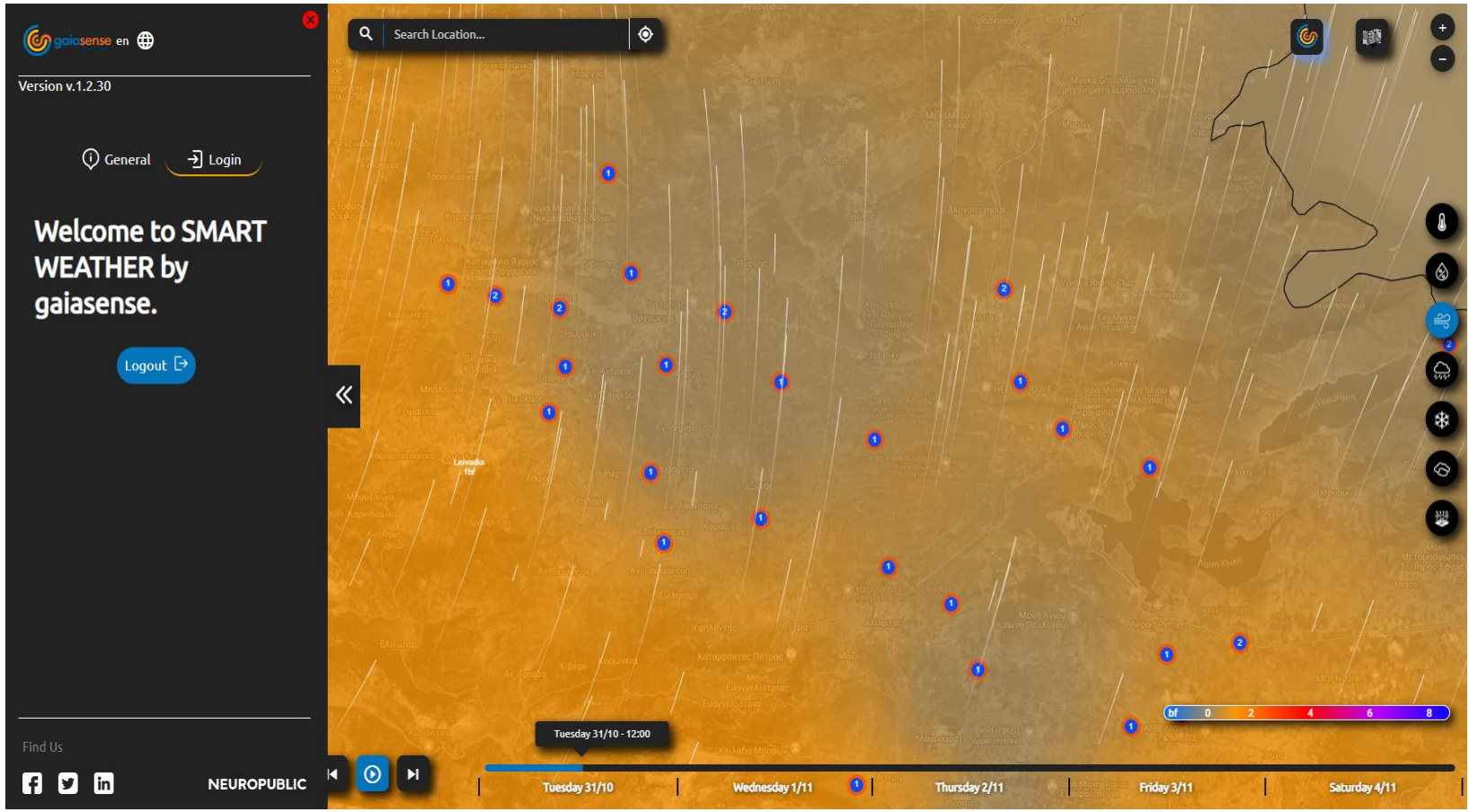
Very limited access to credit

Heavily depended on CAP
subsidies

Heavily depended on inputs cost



Decision Support System



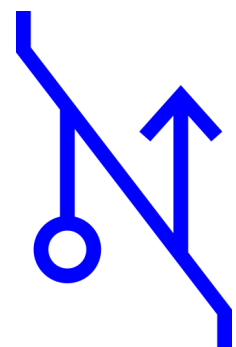
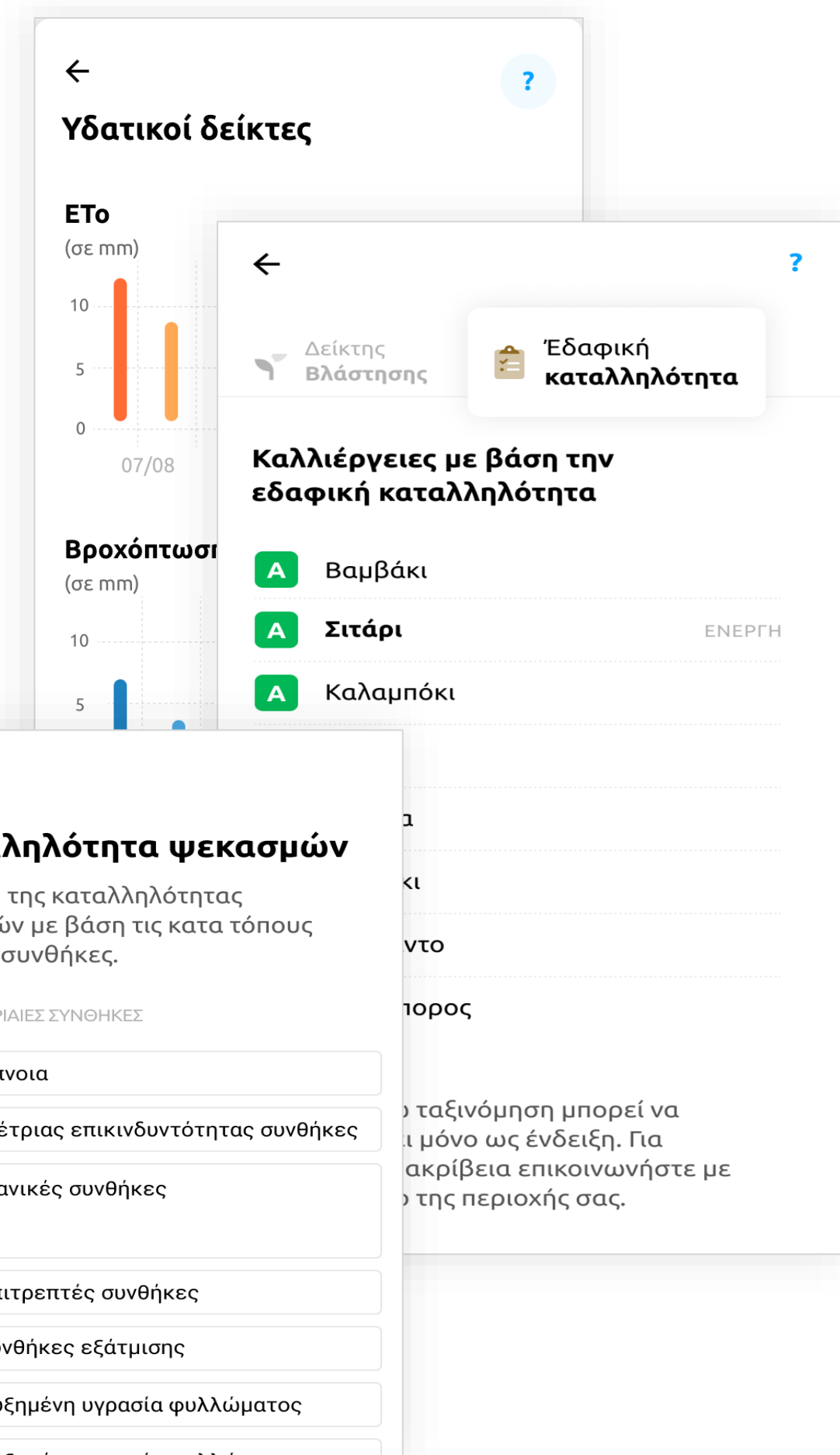
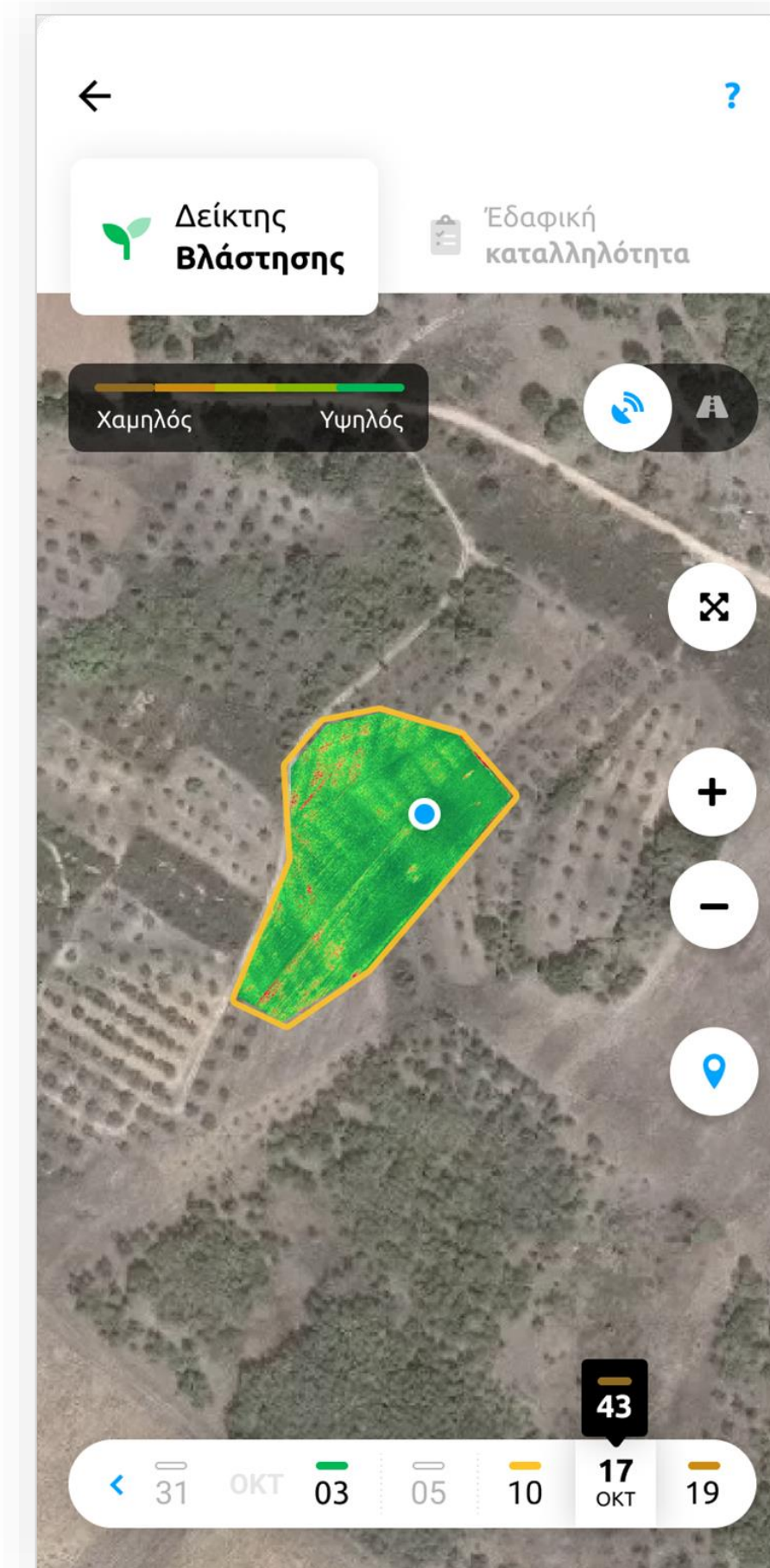
Smarter use of inputs

Reduced environmental footprint

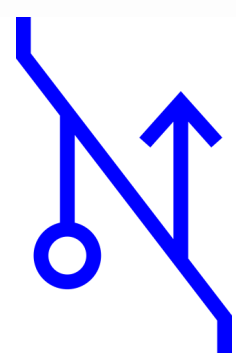
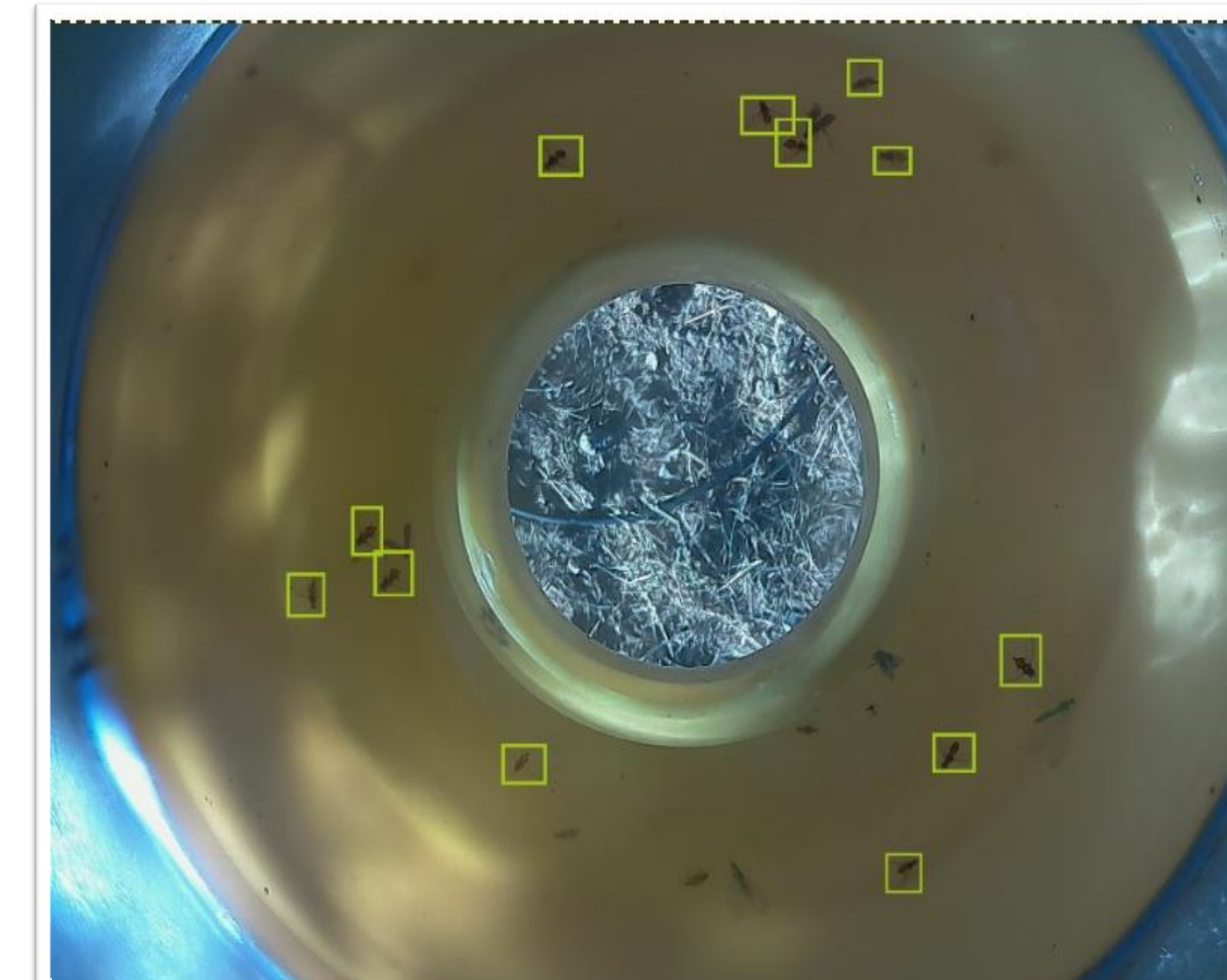
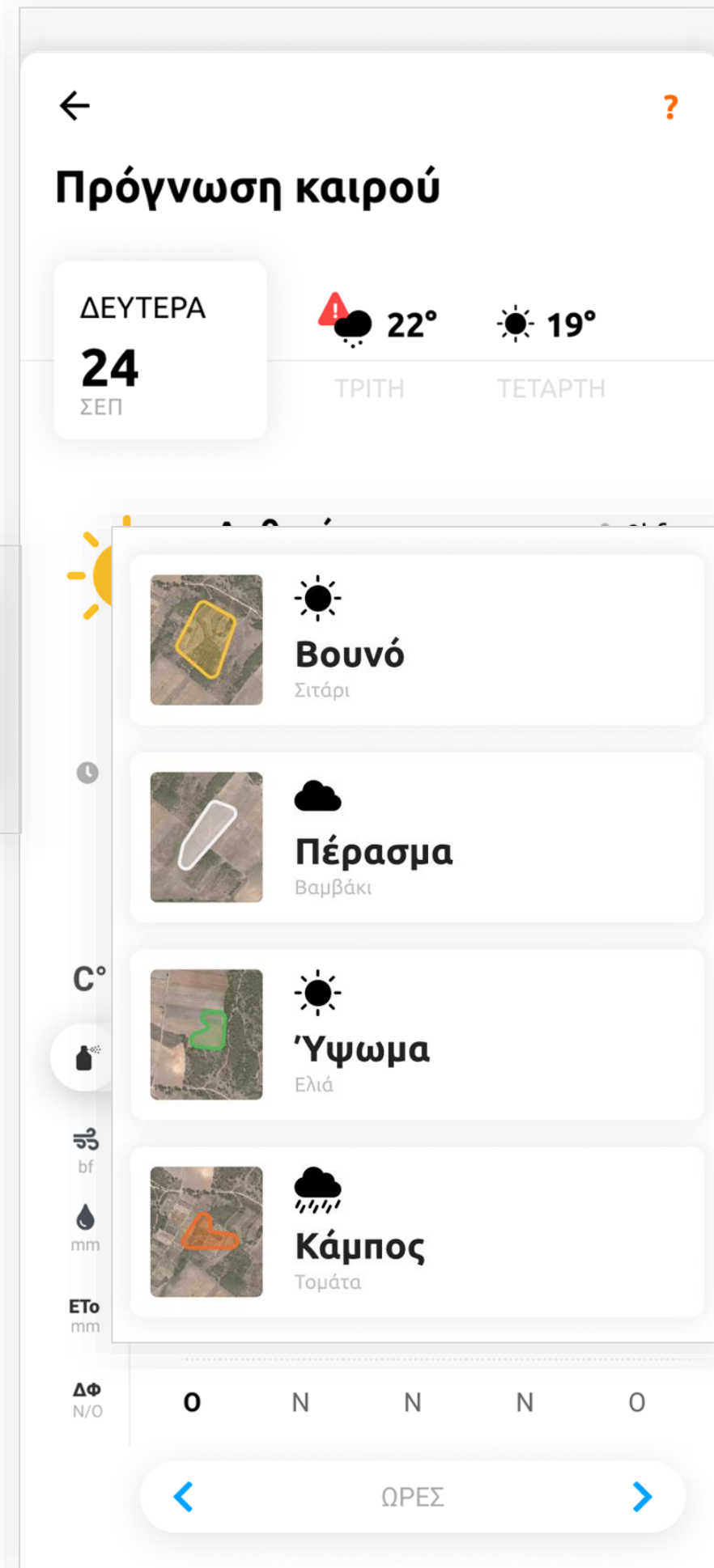
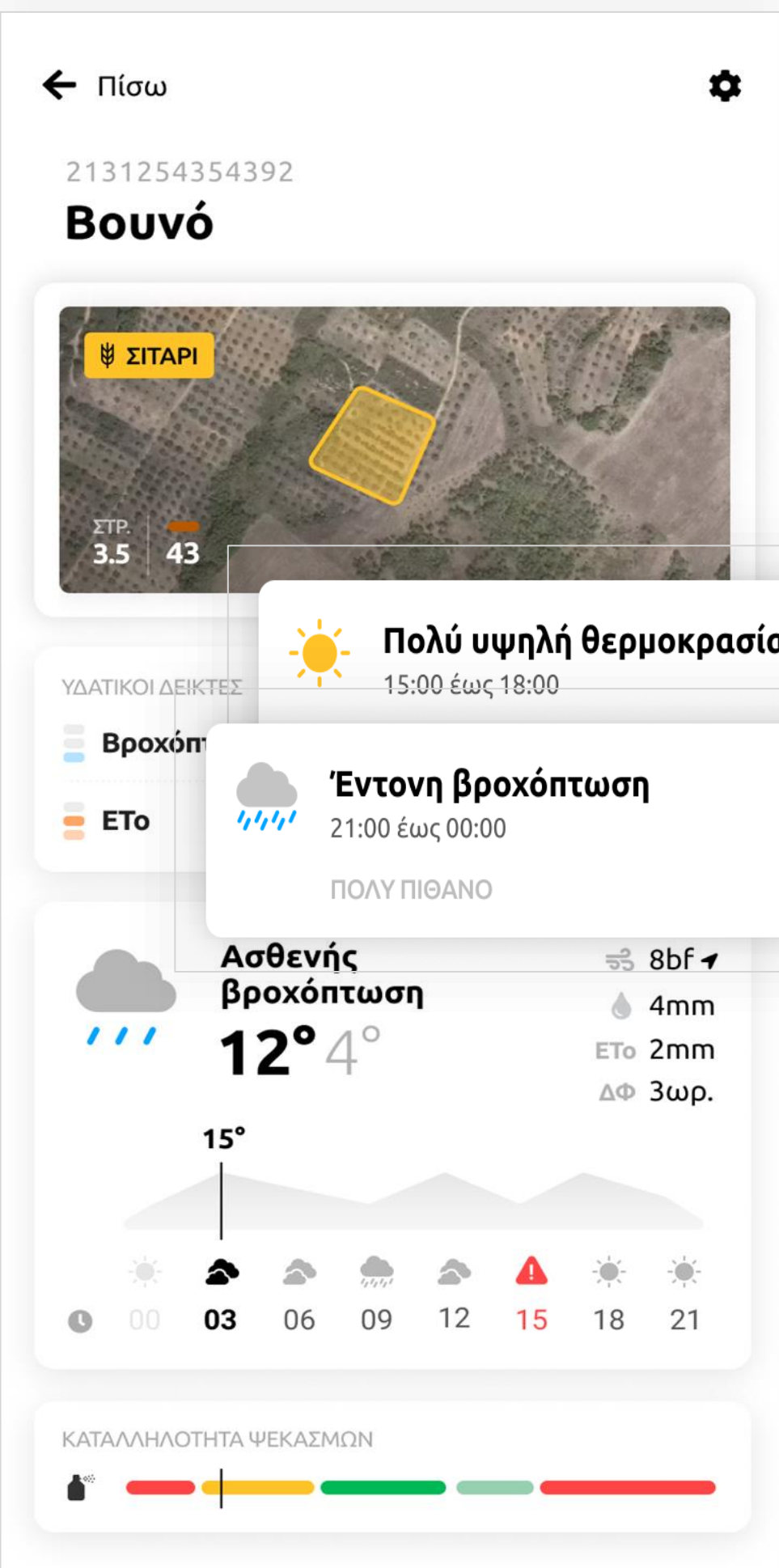
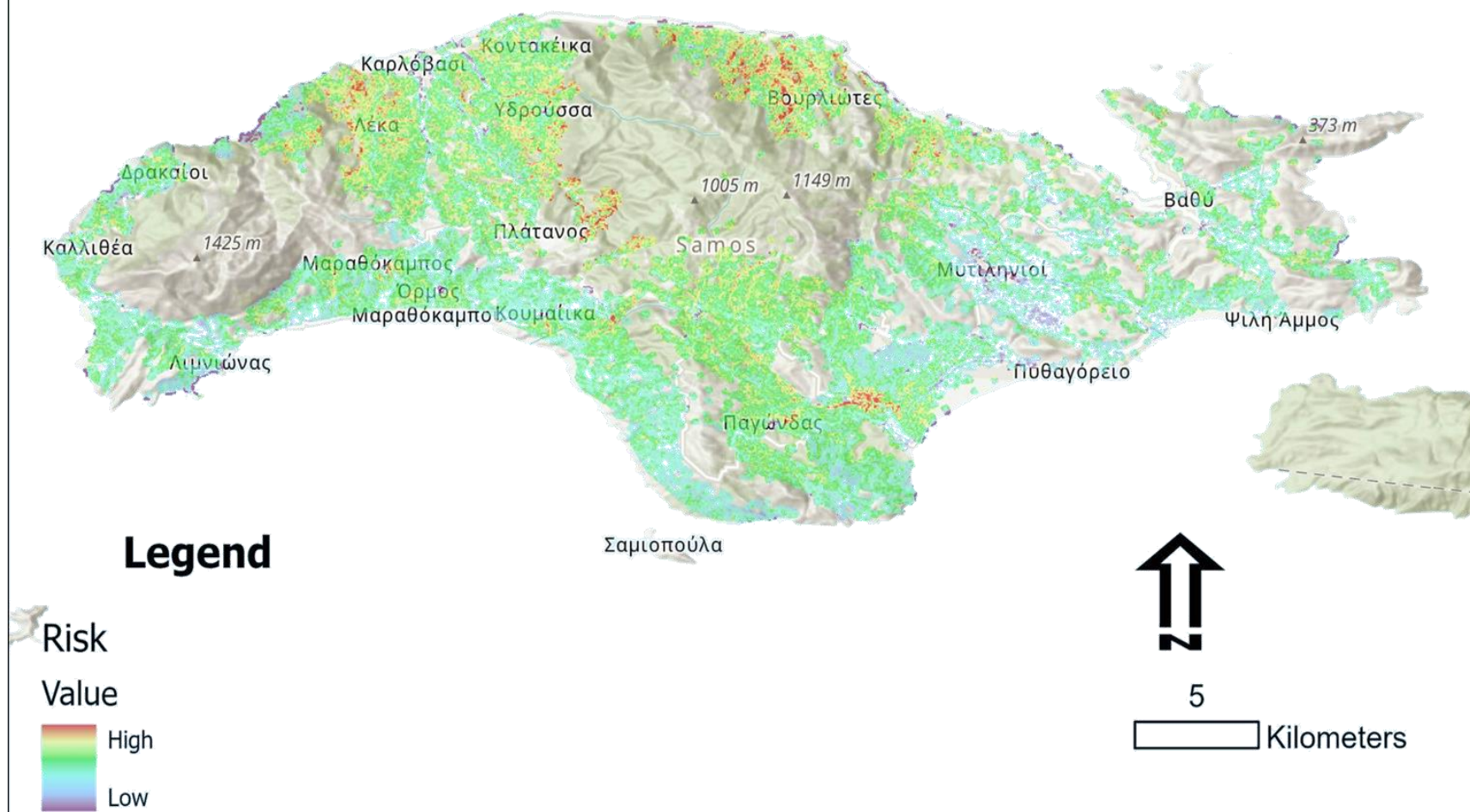
Reduced production cost

Added value to the products

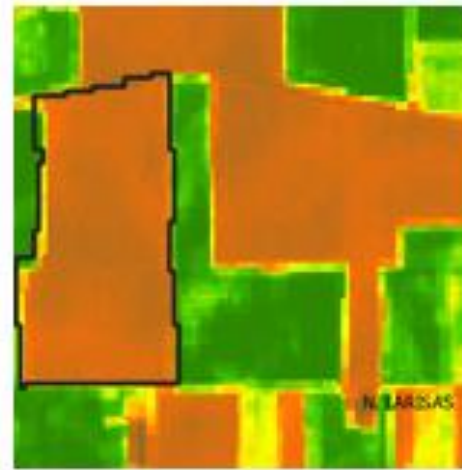
win-win



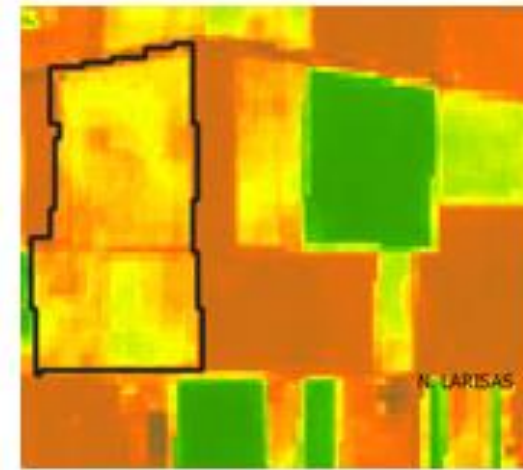
Preventing the spread of disease



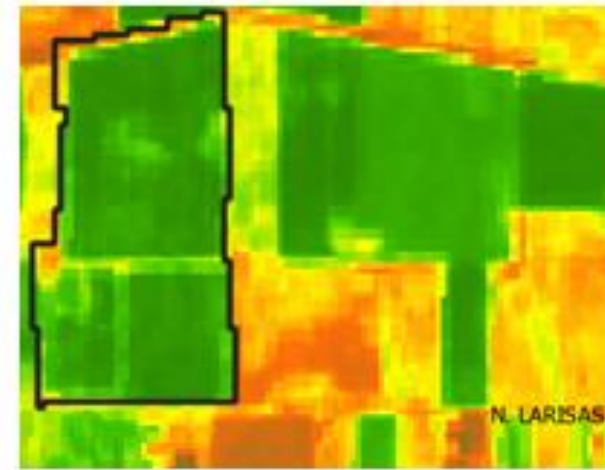
Βαμβάκι



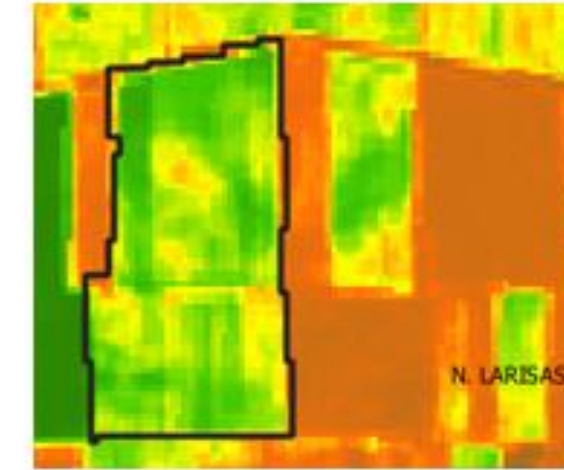
13/04, 103^η ημέρα



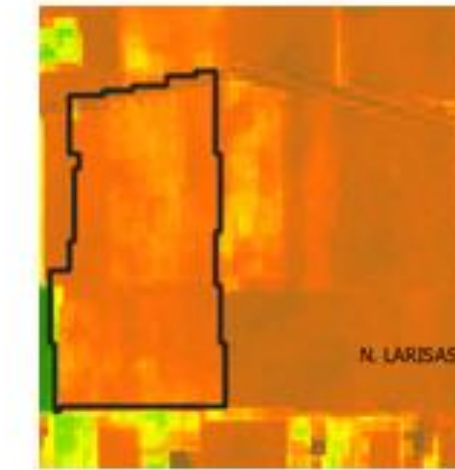
02/07, 182^η ημέρα



11/08, 221^η ημέρα



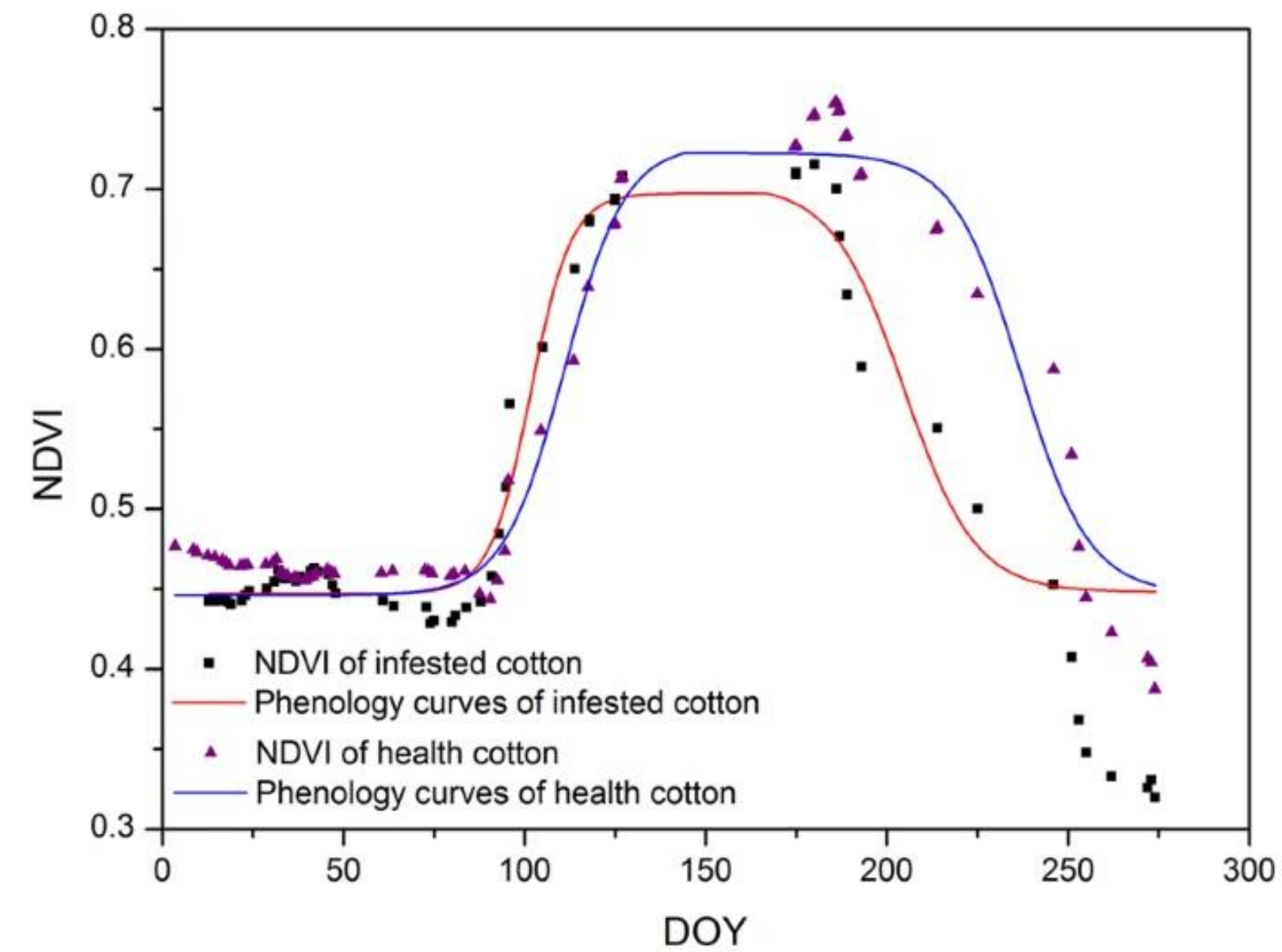
30/09, 270^η ημέρα



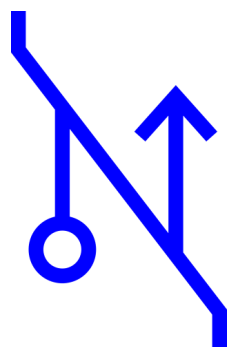
09/11, 309^η ημέρα

Checking plant's health

Yield estimation – Evaluation of practices



<https://www.nature.com/articles/s41598-018-20156-z>



Nationwide public infrastructure

45M RRF project – “Digital Transformation of the Agricultural Sector”

Online Services and Data Access Portal

Data Interpretation and Visualization

Remote Sensing Data Management

Data Warehouse – Business Intelligence

Farm Management and Monitoring

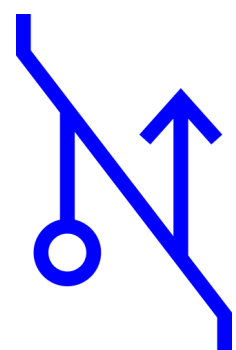
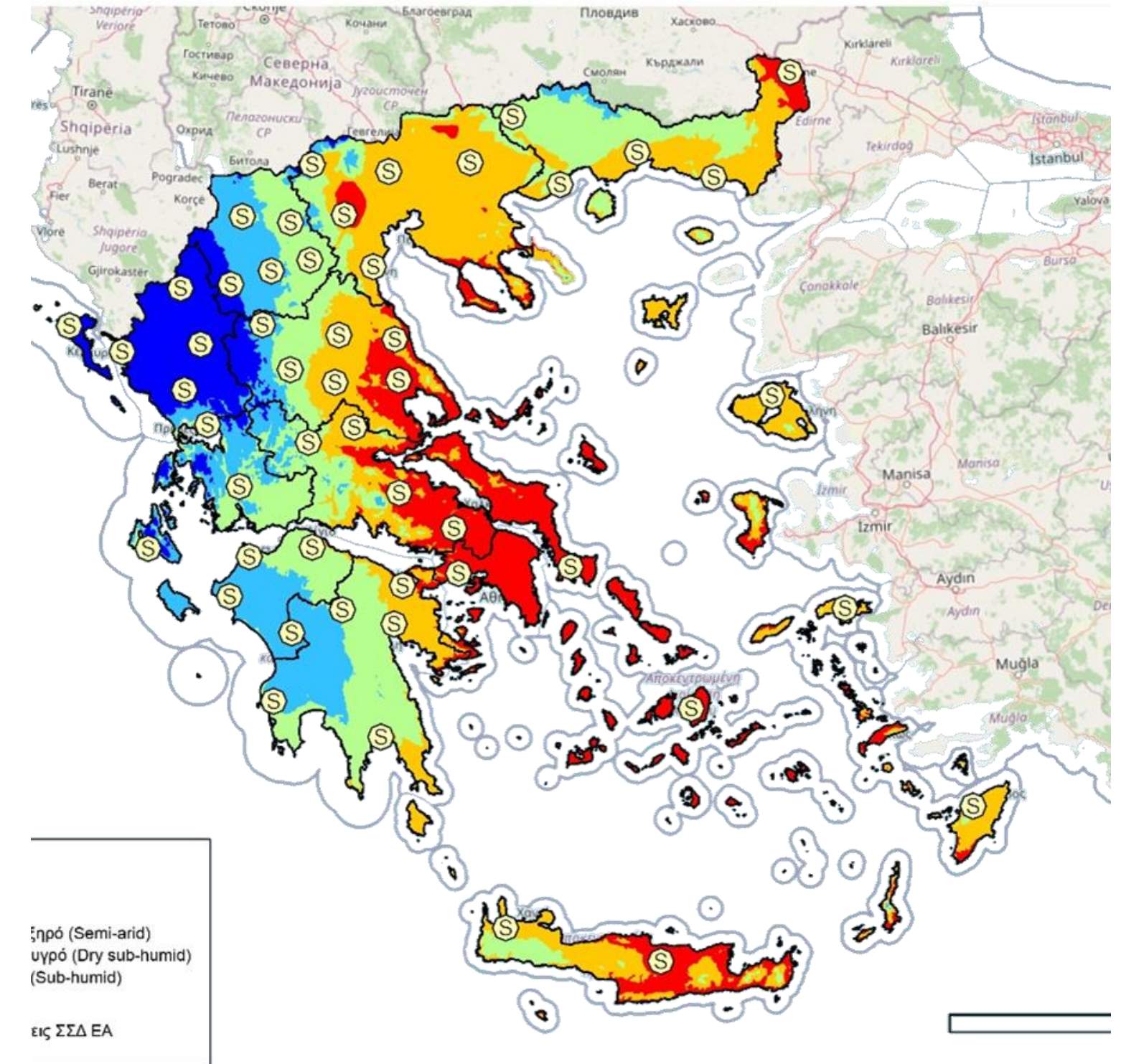
Farm Advisory System Repository

Risk Management and Resilience Assessment

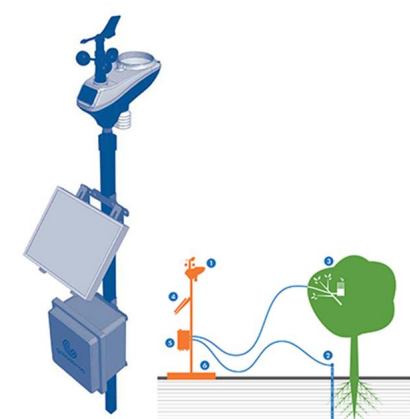
Smart Algorithm Management

Interoperability

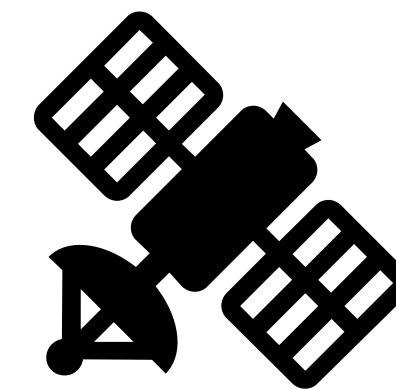
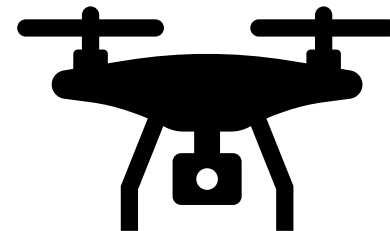
Tele-learning



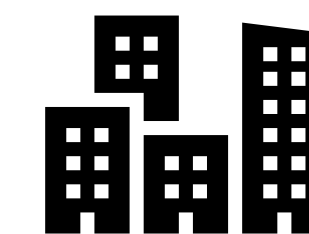
3.050



50



15

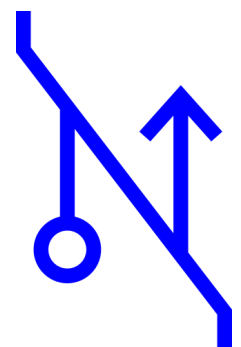
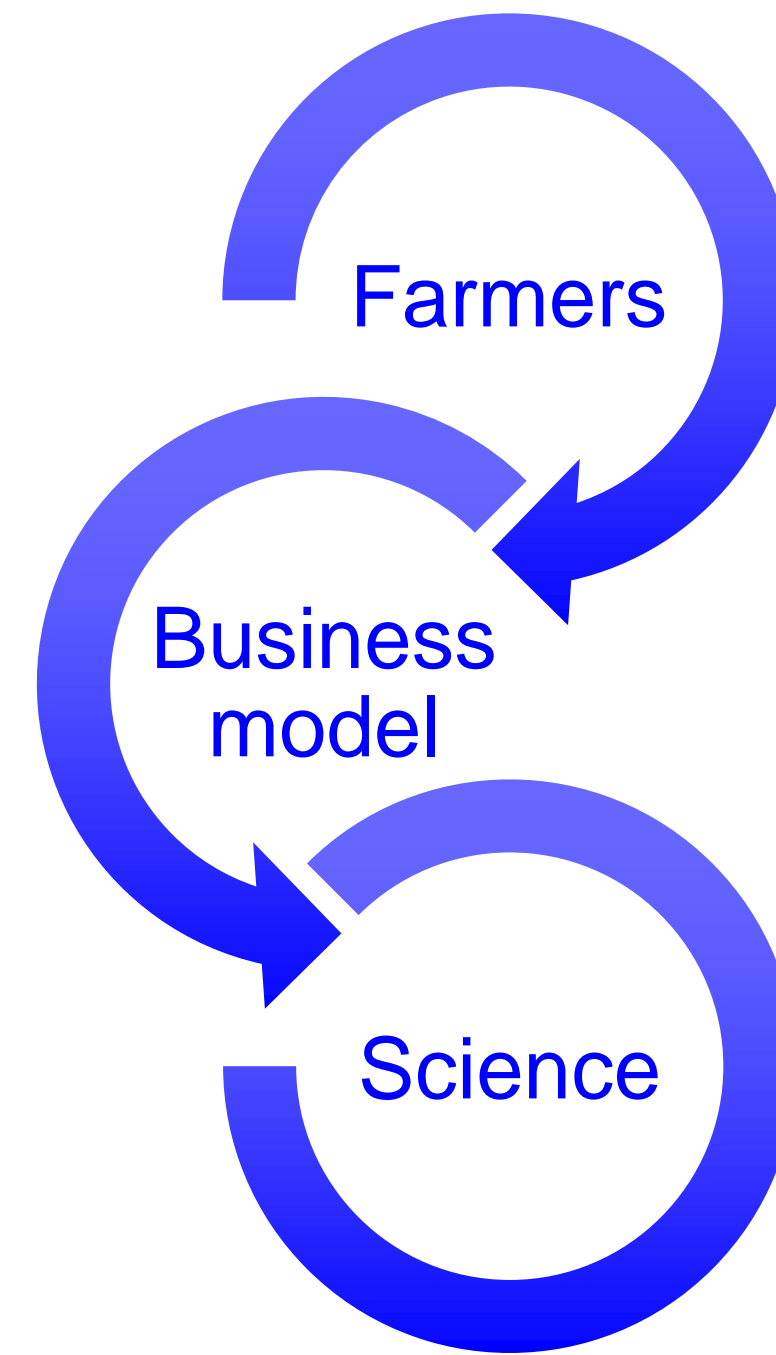


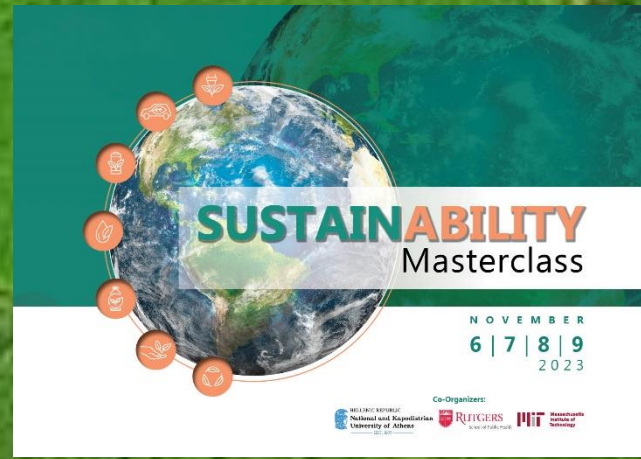
Opportunities, challenges & risks

Αποτρεπτικοί παράγοντες για τη χρήση νέων τεχνολογιών στην παραγωγή

Όσοι δηλώνουν ότι δεν πρόκειται κάνουν χρήση νέων τεχνολογιών στην παραγωγή

Τι θα λέγατε ότι είναι αυτό που σας αποτρέπει από τη χρήση νέων τεχνολογιών στην παραγωγή σας;





THANK YOU

d_kapnias@neuropublic.gr

