EU CAP Support

Agrowth: Phenology & Yield estimation to enhance farm performance

Irlogi: e-shape Workshop
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Beyond Center of Excellence

Monitoring Agricultural Practices and Food Security at various partial scales and resolutions

- **Smart farming**
- **Monitoring of the CAP**
- **Food Security**

Understanding the Earth system, its weather, climate, atmosphere, and natural/human-induced hazards to protect the global environment, reduce disaster losses, and achieve sustainable development.

Development of an Early Warning System that utilizes new and enhanced satellite EO sensors with the purpose of forecasting and risk mapping the mosquito-borne diseases outbreaks

Earth Observation (EO) services as it regards disaster and emergency management, and risk reduction

Development of a nowcasting system and short term forecasting system for solar energy exploitation

BEYOND
Centre of EO Research
and Satellite Remote Sensing

The Team

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The Big Picture

03. Simplify the CAP

Assist the farmer to better conform with the CAP rules.

04. Value chain

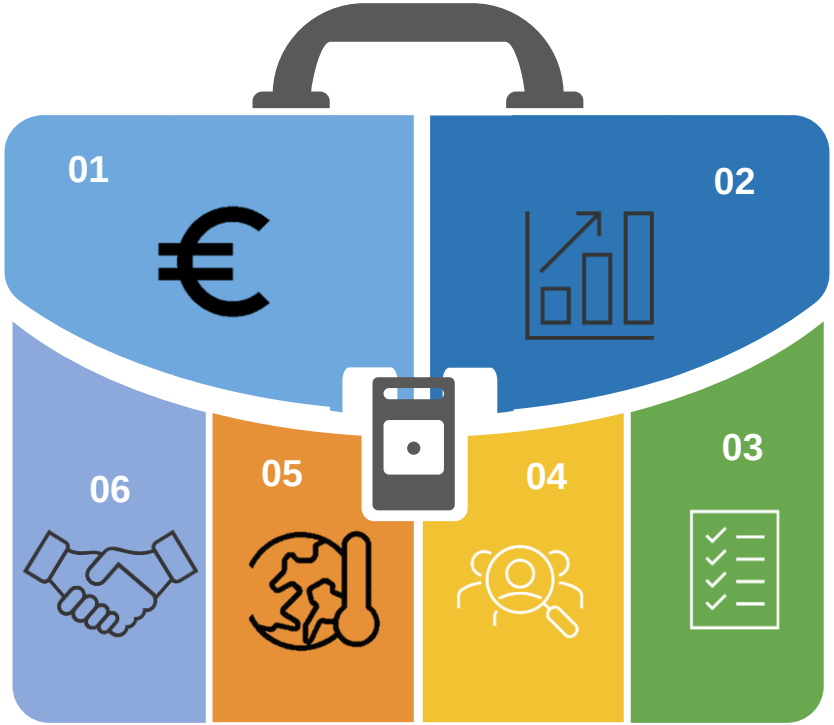
Improve farmers' position in the value chain

05. Climate change

Contribute to climate change mitigation and adaptation, as well as sustainable energy.

06. Insurance

Ensure transparent interactions between farmers and insurance organizations

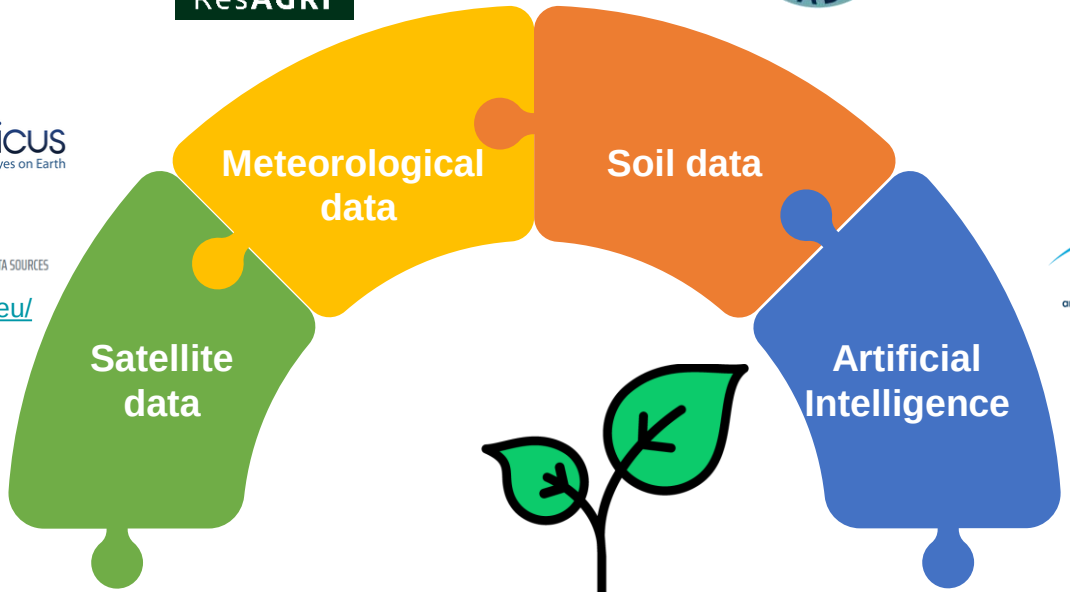


01. Farmer income

Support viable farm income and resilience across the Union to enhance food security.

02. Competitiveness

Increase competitiveness and agricultural productivity in a sustainable way to meet the challenges of higher demand in a resource-constrained and climate uncertain world..



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UMBRELLA SENTINEL ACCESS POINT

A SINGLE POINT OF ACCESS FOR SENTINEL DATA, CONNECTING TO MULTIPLE SENTINEL DATA SOURCES

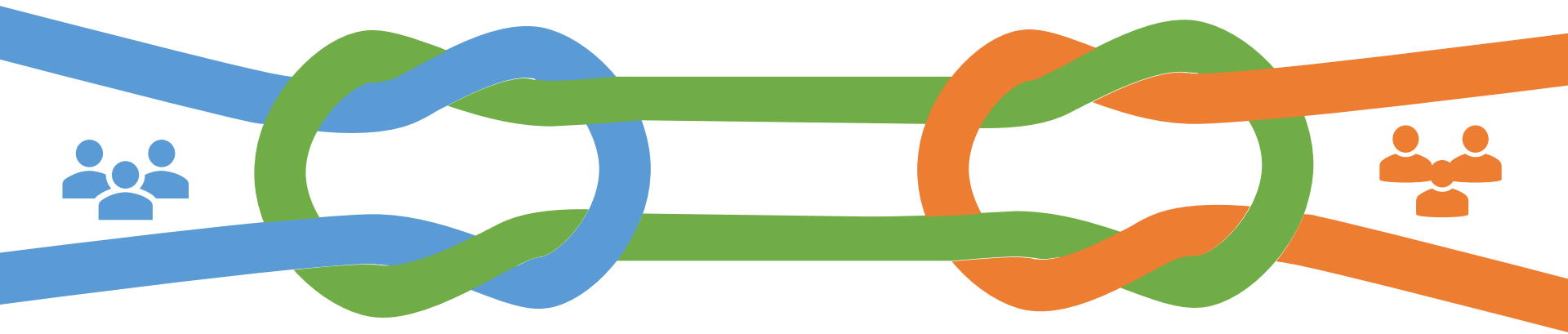
http://umbrella.beyond-eocenter.eu/

in house development

Stakeholders and Users

Main co-designer

GAIA EPICHEIREIN



Potential users

- ➔ **14** farmers' cooperatives, companies and organizations (Vergina and Sipcam Hellas among them)
- ➔ In process for agreement (MoU) with 3 of them (THESto, THESgi, SynAgros)

Active users

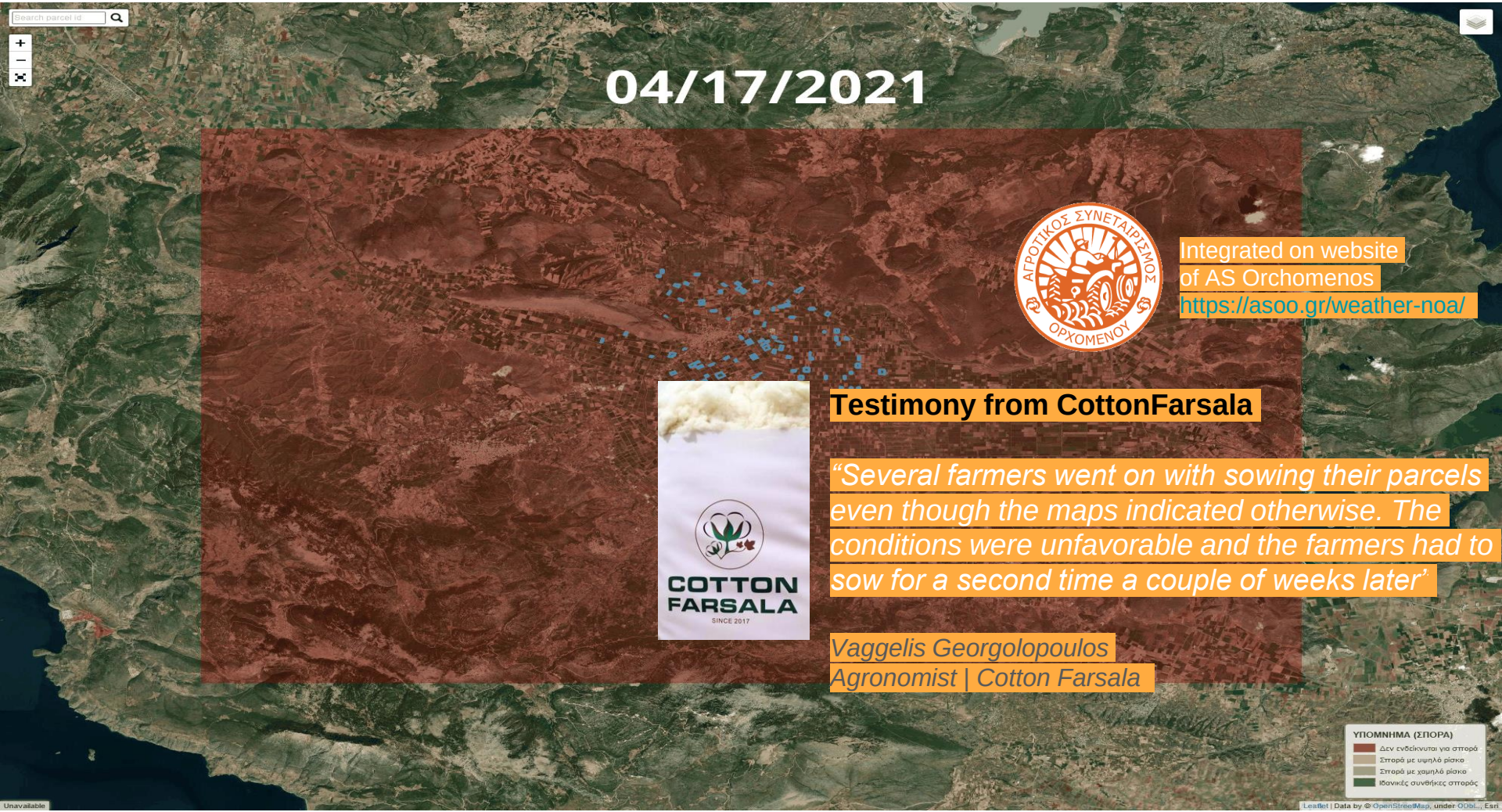
MoUs with 2 organizations:

- ➔ Cotton Farsala
- ➔ AS Orchomenos

GAIA EPICHEIREIN

Services

To sow
or not to sow



Integrated on website
of AS Orchomenos
https://asoo.gr/weather-noa/

Testimony from CottonFarsala

"Several farmers went on with sowing their parcels even though the maps indicated otherwise. The conditions were unfavorable and the farmers had to sow for a second time a couple of weeks later"

Vaggelis Georgolopoulos
Agronomist | Cotton Farsala

Phenology Estimation

Estimation of major and minor phenological stage. Each parcel is colorized based on major phenology stage

Weather Forecast

GDD, max and min ambient temperatures per parcel and it interplays with risk.resagri.eu

Vegetation Indices

Provision of the evolution of the vegetation indices NDVI, NDWI, PSRI and some crop specific indices

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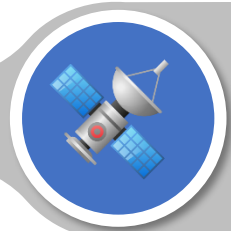
optimal day for sowing maps

Yield Production

Prediction of the yield in kg/ha, months earlier from the harvest.



Overlay Satellite Images

Overlay of satellite images (RGB / NDVI) over the users' parcels for a chosen acquisition date and area of interest.

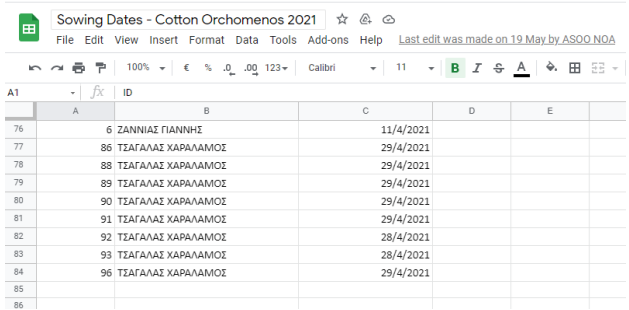
Crop Classification

The outline of each parcel os colorized with a color equivalent to its crop

Field Campaigns

Field Campaigns on

- ➔ Orchomenos - 100 parcels
- ➔ Farsala - 100 parcels
- ➔ Thessalia - 52 parcels


Sowing Dates - Cotton Orchomenos 2021

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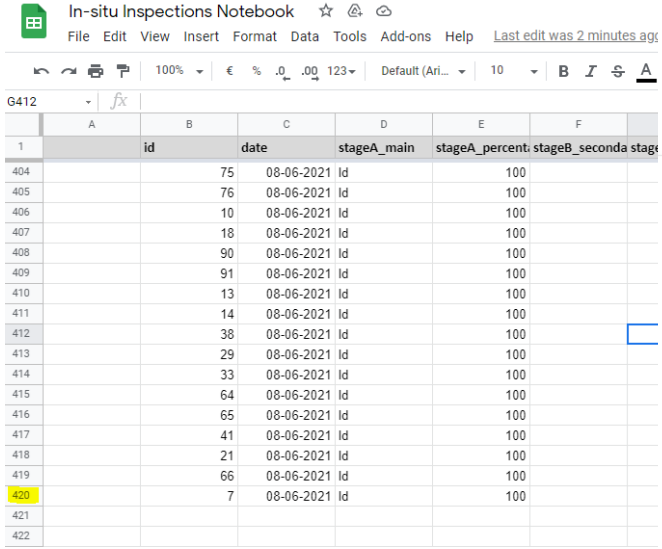
77	86	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
78	88	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
79	89	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
80	90	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
81	91	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
82	92	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	28/4/2021		
83	93	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	28/4/2021		
84	96	ΤΣΑΓΑΛΑΣ ΧΑΡΑΛΑΜΟΣ	29/4/2021		
85					
86					

In-situ Inspection Protocol

We have designed and follow a compact and easy to use protocol for the inspector based on need of our services (phenology estimation. yield prediction)


In-situ Inspections Notebook

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408		90	08-06-2021	Id	100		
409		91	08-06-2021	Id	100		
410		13	08-06-2021	Id	100		
411		14	08-06-2021	Id	100		
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413		29	08-06-2021	Id	100		
414		33	08-06-2021	Id	100		
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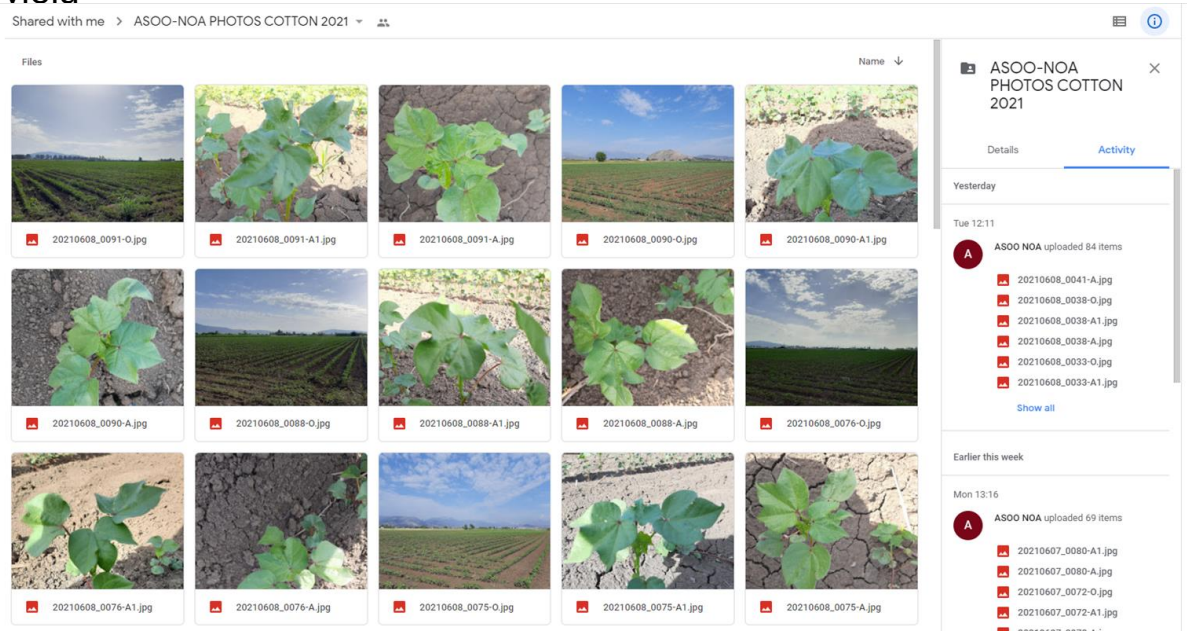


A first empirical evaluation

Case 1

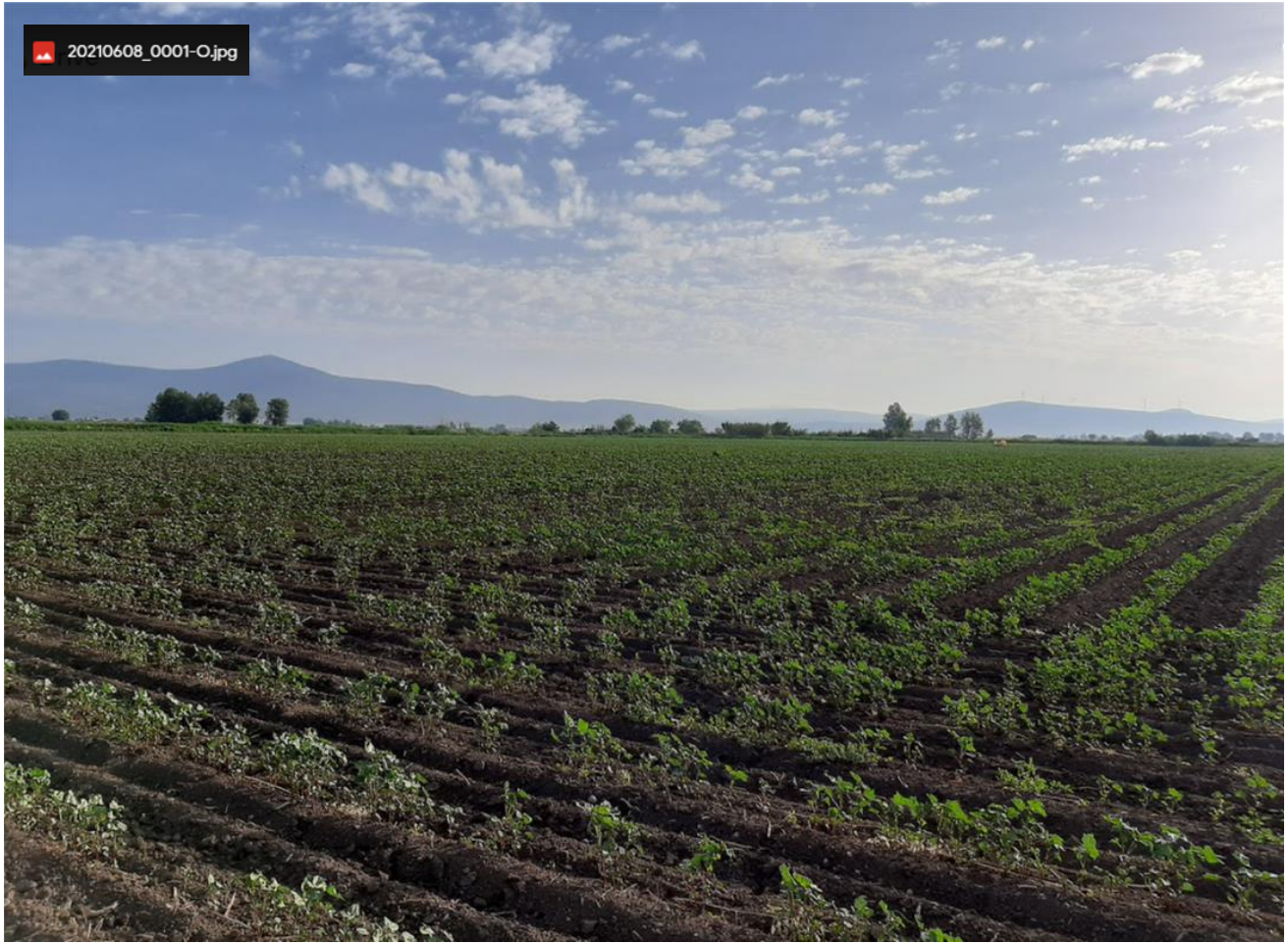

Parcels
Phenology
Crop mismatch
Predicted Crop type
Selected Parcel: 22
Leaflet | Tiles © Esri
NDVI
20210607
Select
Clear
TODAY
26.89°C
16.37°C MIN
TOMORROW
27.08°C
16.75°C MIN
view detailed weather forecast
10 days forecast hourly temperature, soil temperature, humidity, precipitation and more
Phenology Stages
Selected Parcel ID: 22
Root Establishment
100%
Leaf Development
MAJOR
39% on 07/08/21
Squaring
Flowering
Boll Development
Boll Opening

20210604_0022-O.jpg

20210604_0022-A1.jpg

Case 2


Parcels
Phenology
Crop mismatch
Predicted Crop type
Selected Parcel: 1
Leaflet | Tiles © Esri
NDVI
20210607
Select
Clear
TODAY
28.42°C
16.02°C MIN
TOMORROW
28.16°C
16.64°C MIN
view detailed weather forecast
10 days forecast hourly temperature, soil temperature, humidity, precipitation and more
Phenology Stages
Selected Parcel ID: 1
Root Establishment
100%
Leaf Development
MAJOR
79% on 07/08/21
Squaring
Flowering
Boll Development
Boll Opening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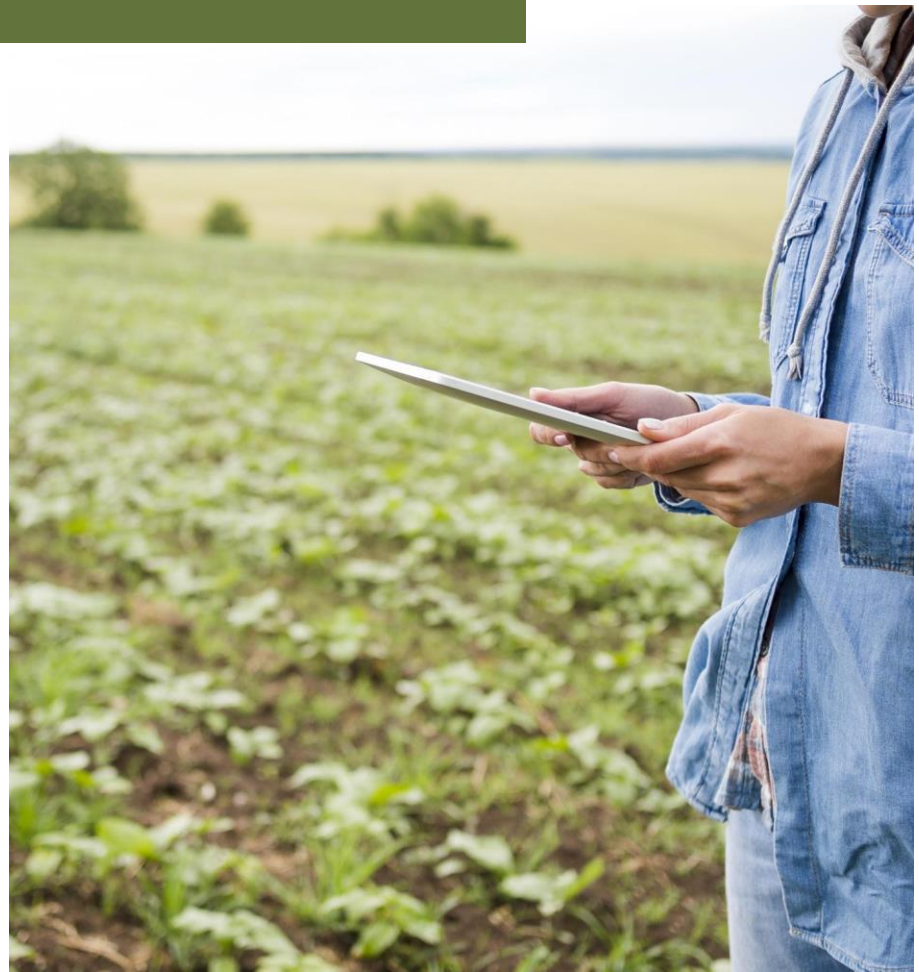
20210608_0001-A1.jpg



http://agrowth.beyond-eocenter.eu/

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Phenology and yield estimation service to enhance farm performance

e-shape


Thank you!
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NATIONAL OBSERVATORY ATHENS
BEYOND
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and Satellite Remote Sensing