

# EU SOIL DAY

#EUsoilDay

How to set Efficient Cropping Systems?  
Pierluigi Meriggi - Horta

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23

PRESIDENCIA  
ESPAÑOLA  
CONSEJO DE LA  
UNIÓN EUROPEA

BRUSSELS  
6 NOV 23

#EUsoilDay



EVENTO POLICY MAKER

# LIFE AGRESTIC

Reduction of Agricultural Greenhouse gases  
Emissions Through Innovative Cropping systems

## Il consorzio

Coordinatore:

**HORT@**  
— From research to field —

Partner:



UNIVERSITÀ  
CATTOLICA  
del Sacro Cuore



Sant'Anna  
School of Advanced Studies - Pisa



ART-ER

ATTRACTIVENESS  
RESEARCH  
TERRITORY



SOCIETÀ  
PRODUTTORI  
SEMENTI S.p.A.



Il progetto LIFE AGRESTIC  
ha ricevuto finanziamenti  
dal Programma LIFE  
dell'Unione Europea

Brussels,  
Nov 6<sup>th</sup>  
2023




# Challenge: how to set Efficient Cropping Systems?

1. Introduction of legumes into crop rotation
2. Introduction of regenerative agricultural practices (e.g. cover crops)
3. Improvement of Decision Support Systems (DSSs)
4. Feasibility studies on Payment Ecosystem Services (PES)
5. N and C-efficient cropping system (ECSs) modeling





# Main activities

-  **C1** Recovery, characterization and multiplication of local and rare varieties/lines of legumes and catch crops in order to identify the most promising in terms of agronomic and environmental performance
-  **C2** Integration of new features on greenhouse gas emissions in the DSS for the specific crops considered and development of a new DSS for catch crops
-  **C3** Testing of innovative cropping systems (ECS) in 3 demonstration sites, representative of different climatic and agricultural realities (Tuscany, Emilia-Romagna and Apulia), and comparison with traditional rotations (CCS)
-  **C4** Design, development and testing of a prototype for the real-time detection of greenhouse gas emissions from the soil.
-  **C5** Definition and validation of a biogeochemical model for estimating greenhouse gas fluxes from the soil based on environmental conditions and cultivation techniques.
-  **C6** Enhancement of the climatic and environmental performances achieved thanks to the development of a product label, which certifies the adoption of ECS systems, and the creation of schemes for the payment of Ecosystem Services, to be introduced in the new support policies.
-  **C7** Analysis of different scenarios for mitigating greenhouse gas emissions and socio-economic effects. Evaluation of the replicability of the project in other European countries.
-  **C8** Involvement in the co-development of project activities of key players in the supply chains of crops introduced into the ECS systems.



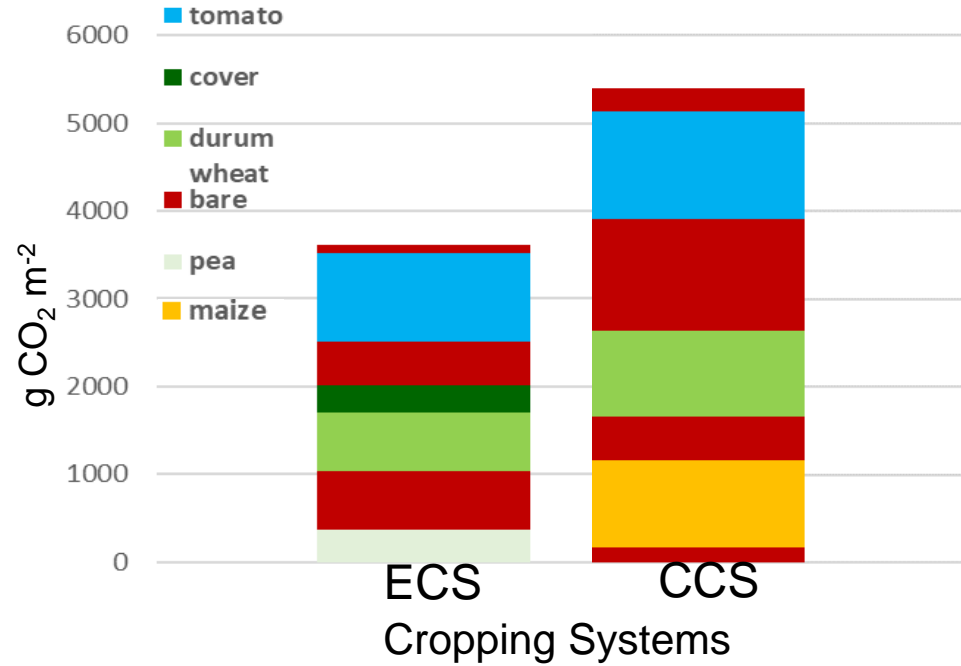
# Project findings

- **New performing genotypes:** legumes genotypes testing. The most promising varieties will begin the registration process
- **DSSs updating:**
  1. Yield forecast model
  2. Crop.net
  3. New DSS for Catch crop
  4. AresC (CO<sub>2</sub> and N<sub>2</sub>O emissions model)
  5. Stem rust, blight of chickpea, sclerotinia models
- **Carbon Farming, identify strategies for:**
  1. better soil Carbon and Nitrogen organication
  2. lower GHG emissions
- **New prototype to measure GHG emissions**
- **New PES:** setting up an innovative remuneration mechanisms for farmers who adopt resilient and sustainable practices. Ecosystems Services adopted:
  1. Pest management
  2. Water storage
  3. Pollination
  4. Protection from erosion
  5. Carbon sequestration
  6. Biodiversity conservation
  7. Climate regulation
  8. Landscape quality
- **The Agrestic product brand**

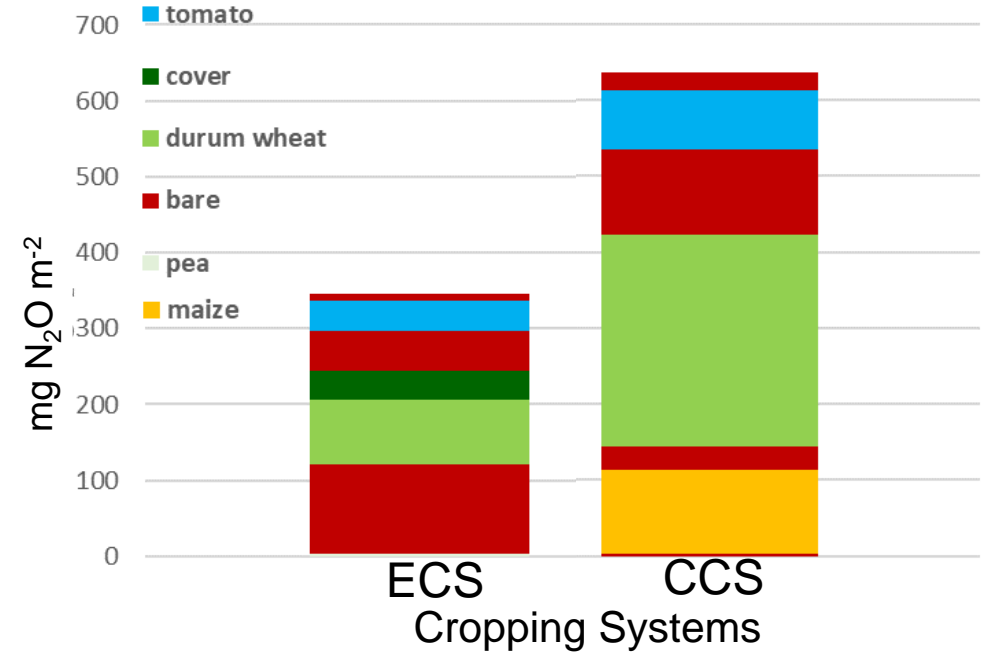


# Some results: GHG emissions and Soil Organic Carbon (SOC)

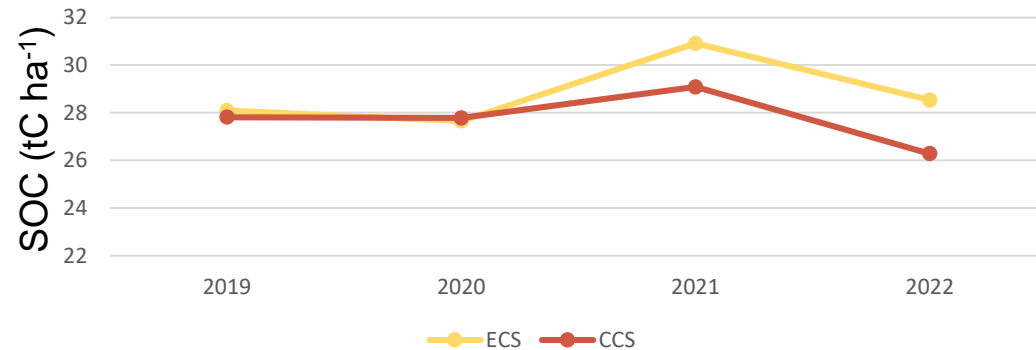
## CO<sub>2</sub> - Ravenna



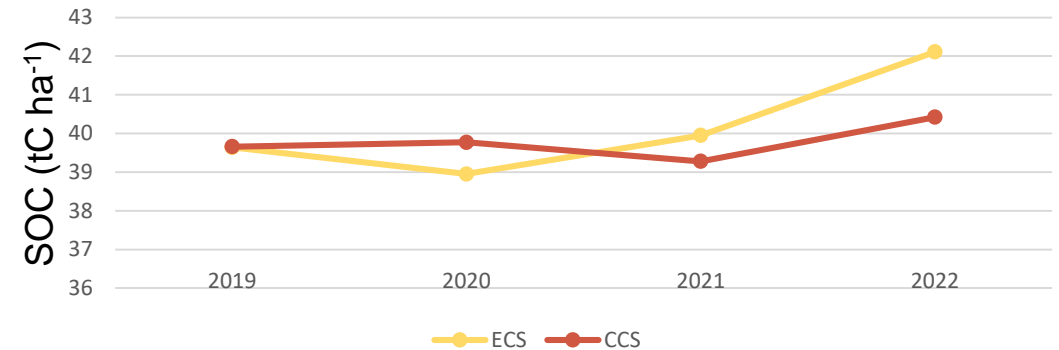
## N<sub>2</sub>O - Ravenna



## SOC - Ravenna

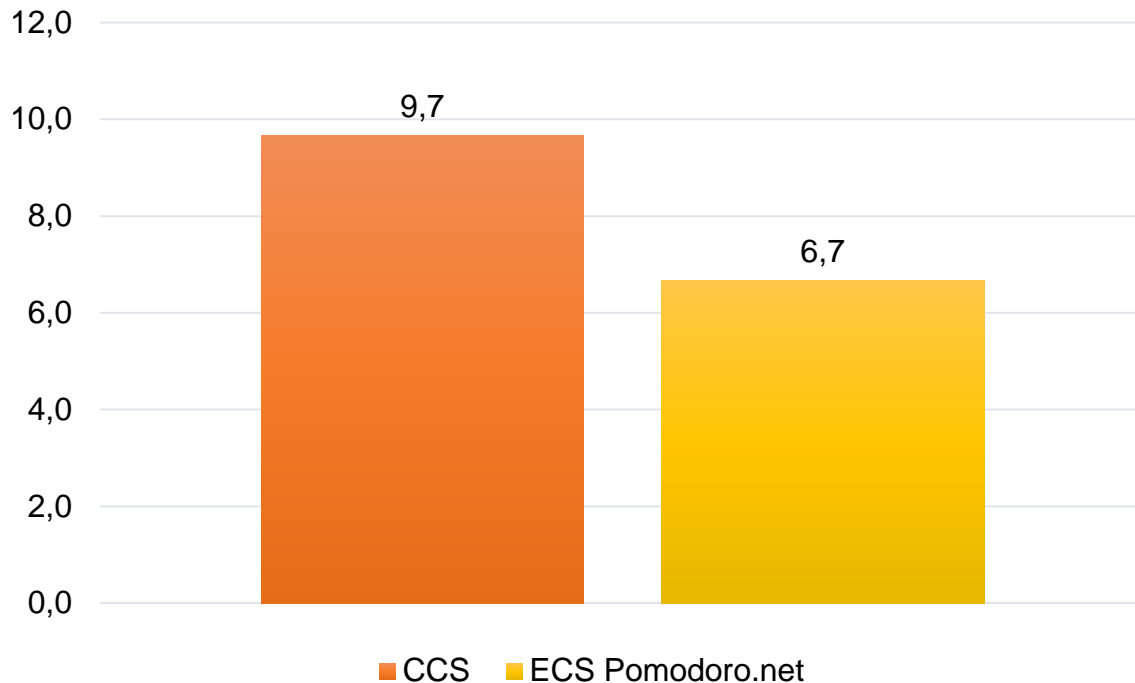


## SOC - Foggia

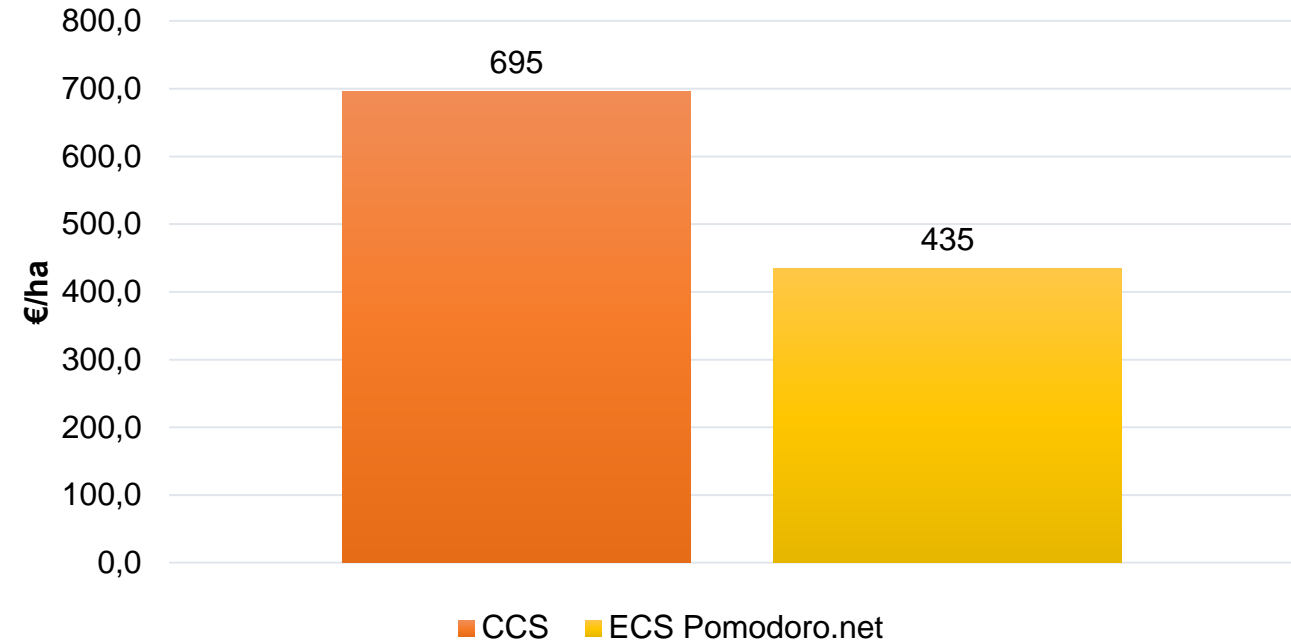


# Some results: tomato, CCS vs ECS

## Number of fungicide treatments



## Fungicide treatment costs (Fungicide + crop operation)



Triennial mean **saving cost** on the fungicide treatment costs using Pomodoro.net:

**-260,7 €/ha**



# Program:

- Piacenza, Nov 22 2023: final conference
- Ravenna, Nov 23 2023: visit to the platform



**22-23 NOVEMBRE 2023**  
Piacenza  
Ravenna

FINAL CONFERENCE  
**LIFE AGRESTIC**  
Reduction of Agricultural Greenhouse gases Emissions Through Innovative Cropping systems

**AGRESTIC**

**PROGRAMMA**

**22 novembre • Piacenza**  
Università Cattolica del Sacro Cuore  
Via Emilia Parmense 84

**09.00 Saluti introduttivi**  
09.15 Caratterizzazione e selezione di leguminose e catch crops per gli Ecs  
Sofia Ghitarrini, *Psb*  
09.45 La modellistica e l'uso del Dss  
Irene Salotti, *Ucsc*  
10.15 Effetti agronomici e ambientali dei sistemi colturali a confronto  
Pierluigi Meriggi, *Horta*  
10.45 **Domande dal pubblico**  
11.00 *Coffee break*  
11.30 Modellizzazione e analisi dei flussi di gas serra dal suolo nei sistemi colturali  
Giorgio Ragagnoli e Mara Gabbriellini, *Umil*  
12.00 L'impronta ambientale e i servizi ecosistemici in agricoltura  
Guido Croca, *Art-er*  
12.30 Potenzialità di mercato e replicabilità in altri Paesi europei  
Gabriele Canali e Pietro Marconato, *Ucsc*  
13.00 **Domande dal pubblico**  
13.15 *Light lunch*  
14.30 **Sessione di Networking**

- *LIFE DRIVE, Drought Resilience Improvement in Vineyard Ecosystems*  
Irene Diti, *Università Cattolica del Sacro Cuore*
- *HE Leguminose, Legume-cereal intercropping for sustainable agriculture across Europe*  
Shamina Imran Pathan, *Università degli Studi di Firenze*

**15.30 Tavola rotonda**  
Il marchio Agrestic per valorizzare le pratiche agricole sostenibili  
Modera: Alessandro Bosso, *Art-er*  
Partecipano:

- Armando Romaniello, *CertiQuality*
- Remo Magnani, *Propar*
- Paolo Mucci, *Pasta Mancini*
- Tommaso Brandoni, *Verditerre*

• *LIFE Agricolture, Livestock farming against Climate Change in the Emilian Apennines*  
Luca Filippi, *Consorzio di Bonifica dell'Emilia Centrale*

• Iscriviti per partecipare IN PRESENZA:  
[https://bit.ly/Final\\_Conference\\_2023](https://bit.ly/Final_Conference_2023)  
• Iscriviti per partecipare ONLINE:  
<https://bit.ly/3sc4Nph>

**23 novembre • Ravenna**  
Horta, Via S. Alberto 327

9.00 **Saluti introduttivi**  
9.30 Approfondimenti in aula sulle attività realizzate nei siti dimostrativi  
11.00 *Coffee break*  
11.30 Visita al sito dimostrativo del progetto Agrestic  
12.30 **Conclusione**  
13.15 *Light lunch*

• Iscriviti per partecipare IN PRESENZA:  
[https://bit.ly/Final\\_Conference\\_2023](https://bit.ly/Final_Conference_2023)

Coordinatore: **HORT@**  
Partner: **UNIVERSITÀ CATTOLICA DEL SACRO CUORE**, **Sant'Anna**, **ART-ER**, **SOCIETÀ PRODUTTORI SEMENTI s.p.a.**, **UNIVERSITÀ DEGLI STUDI DI MILANO**, **new Business Media**