

# Cross-visit 'Circular and organic soil management'

Basilicata, Italy  
28-29 June 2023



Funded by  
the European Union

# EU CAP NETWORK CROSS-VISIT 'CIRCULAR AND ORGANIC SOIL MANAGEMENT'

**OGs (EIP-AGRI) PROJECTS:**

**LI.TE.OF.BIO and FRUTTI\_FICO projects**



**Maria Grazia Tommasini**





## RI.NOVA AND ITS MEMBERS

Ri.Nova manages and implements research and technological development activities to promote the sustainability and competitiveness of the agricultural and agri-food sector. RINOVA represents with its members over 60% of the Gross Salable Vegetal Production of Emilia-Romagna Region. A network of high value stakeholders that allows the development of effective responses to the innovation needs of the different supply chains.

### 50 MEMBERS

AOP ITALIA  
APOFRUIT ITALIA  
APO CONERPO  
APO SCALIGERA

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C.I.O.  
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sezione ortofrutta  
OROGEL FRESCO

CANTINE RIUNITE & CIV  
CAVIRO

TERRE CEVICO  
AGRIPAT

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GRANDI COLTURE ITALIANE  
PROGEO

AGRI2000  
AGRIFUTURO  
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Almaverde Bio  
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Sementi)

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CAV  
Cesena Fiera

C.I.A. Regionale  
C.I.A. Emilia Centro  
CIFO

COLDIRETTI BOLOGNA  
COLDIRETTI MODENA  
COMPAG

Confagricoltura Emilia-Romagna  
Confagricoltura Modena  
Consorzio Agrario di Ravenna  
Consorzi Agrari d'Italia  
Consorzio Tutela Lambrusco

Consorzio della Ciliegia della Susina  
e della frutta tipica di Vignola  
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**RINOVA** agricoltura  
ambiente  
alimentazione

Via Dell' Arrigoni, 120  
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[www.rinova.eu](http://www.rinova.eu)

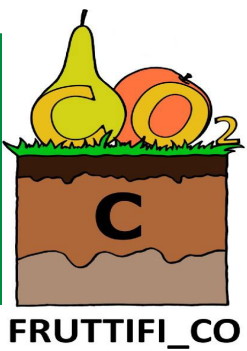
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# FRUTTIFI\_CO: EMILIA-ROMAGNA FRUIT GROWING SEQUESTERS ORGANIC CARBON IN THE SOIL

Emilia Romagna Region (IT)

(01/04/2017 - 20/2/2021)



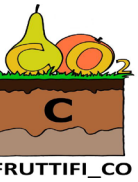
## Project background:

Agriculture has the potential to contribute significantly to climate change mitigation by increased uptake of atmospheric carbon dioxide in the system soil-plant and the reduction of greenhouse gas emissions (GHGs) thanks to application of best practices that can contribute to the maintenance/improvement of organic matter and to reduce GHGs emission.

## Main goal:

Monitoring of the carbon footprint in the fruit sector, with particular reference to soil's ability to stock organic carbon.

# PARTNERS



**Research:** CRPV (now RI.NOVA), I.TER e University of Bologna  
**5 Farms:** belonging 3 main Producers Organizations (Apofruit Italia, Agrintesa e Granfrutta Zani)



BIONDI MASSIMO

SAVORANI  
MAURIZIO

SPADA TURILLI  
MARIA LUISA E FIGLI

SOC. AGR. ZANI MONICA  
E ZANI MAURIZIO

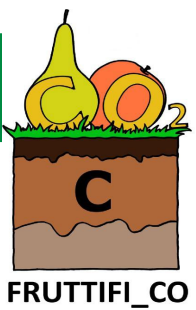
MERCURIALI  
FLAVIO

**RI.NOVA** lead the project and facilitate the communication within partnership, take care of dissemination of results

**I.TER** carried out a soil survey in the partners' farms and carried out the monitoring of the carbon content sequestered in the soil.

The **University of Bologna** determined some pools of organic matter, studied the IFB indexes, the metabolic and the microbial quotients; quantifies the C stocked in the soil and the C emission from the soil.

**Farms** made their companies available and participated in the sharing of scientific results



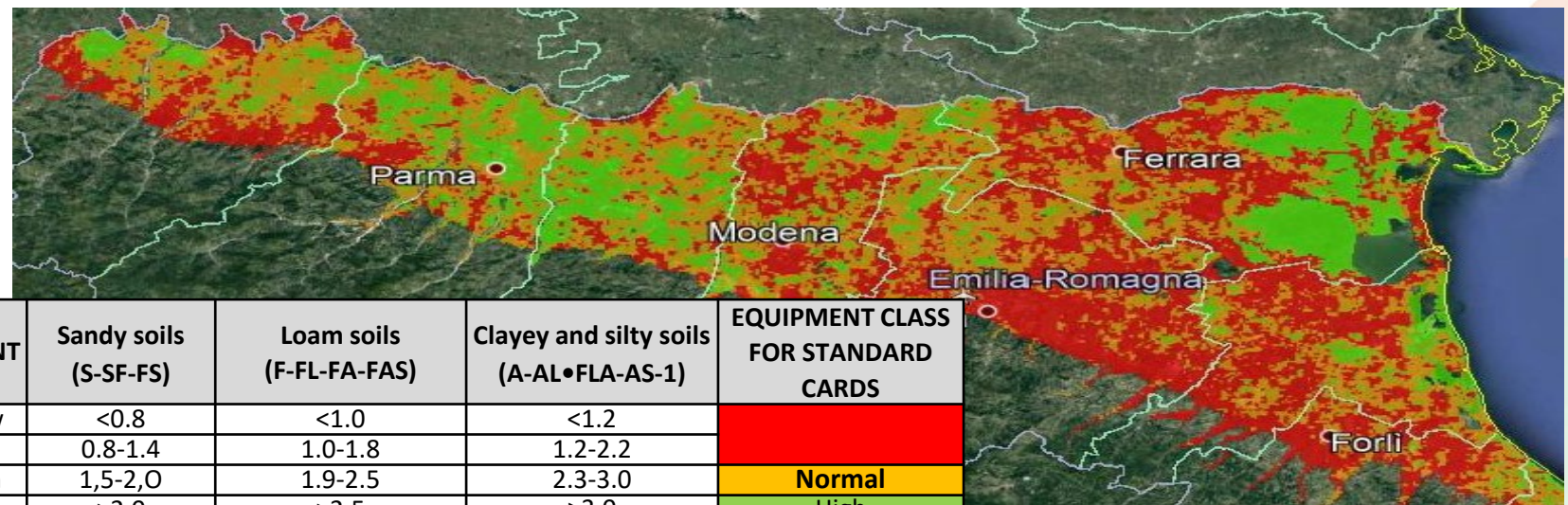
## Project objectives/challenges:

Quantifying the organic matter content and carbon sequestration in the soils of the selected plots (e.g., IPM, Organic, hill, plain): in the last 15-20 years, **grassing is a consolidated practice as an inter-row management practice in Emilia-Romagna orchards.**

Verify the quality of the organic matter by applying indices that provide **indications on the soil's ability to store or dissipate the organic carbon** present.

Define and share appropriate **agronomic orchard management "guidelines"** aimed at sequestering organic carbon in the soil. Identify agricultural practices aimed at mitigating greenhouse gas emissions and promoting carbon sequestration.

MAP of the organic matter content of the lowland soils in EMILIA-ROMAGNA (LAYER 0-30 cm)





# MAIN RESULTS - EMILIA-ROMAGNA FRUIT-GROWING SEQUESTERS ORGANIC CARBON IN SOILS

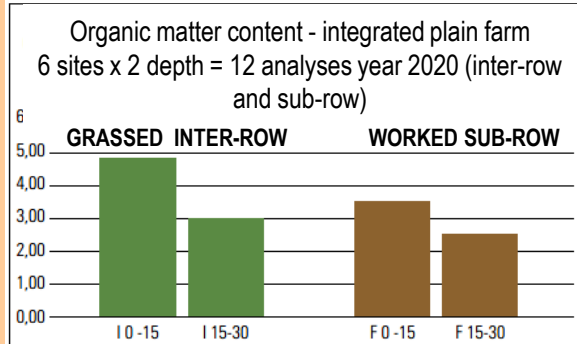


Figura 6 - Contenuto di sostanza organica monitorato nell'anno 2020 in interfila e sottofila di frutteto a produzione integrata in pianura.

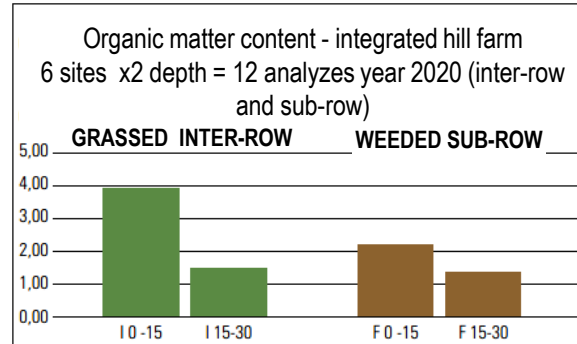


Figura 7 - Contenuto di sostanza organica monitorato nell'anno 2020 in interfila e sottofila di frutteto a produzione integrata in collina

The figures above show in both cases that **the grassed inter-row has a higher content of organic matter than the under-row** and the greatest accumulation is expressed in the first 15 cm as a result of grassing

**Guidelines aimed to improve soil management for the maintenance of organic matter and carbon sequestration in fruit growing**

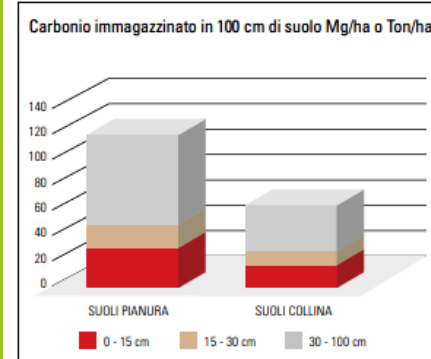


Figura 8 - Stima della capacità media di immagazzinare carbonio nei primi 100 cm di suolo nei frutteti in pianura e in collina.

La stima della capacità dei suoli dedicati alla frutticoltura di immagazzinare Carbonio organico nei primi 100 cm ha fatto riferimento alla seguente equazione di valenza mondiale (Batjes, 1996):

$$\text{stockCO} = \frac{\text{CO} * \text{Da} * \text{s} * (1 - \text{rm}) * 1}{10}$$

"stockCO": espresso in t/ha (equivalenti a Mg/ha);

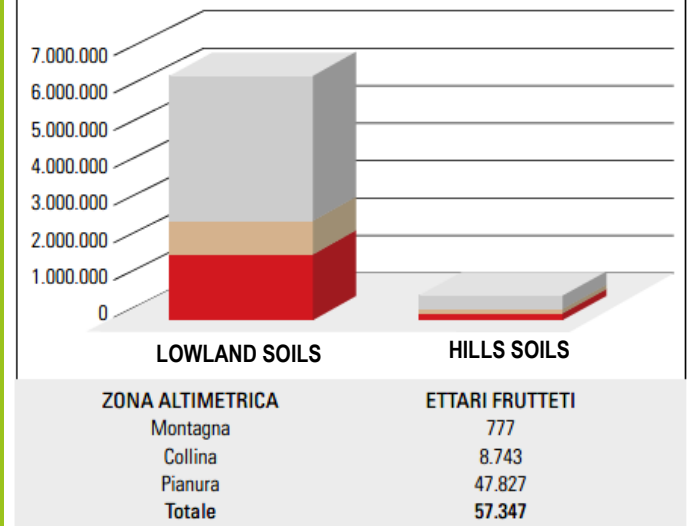
"CO": contenuto in carbonio organico (g di carbonio/kg) derivante dalle analisi con analizzatore elementare eseguite su specifici campioni prelevati per ciascun orizzonte pedologico riconosciuto nei profili di suolo studiati;

"Da": densità apparente (g/cm<sup>3</sup>) selezionata dalle pedofunzioni elaborate dal Servizio Geologico Sismico e dei suoli (Guermandi et al., 2013) in riferimento alle misure effettuate nei profili di suolo;

"s": spessore dell'orizzonte genetico riconosciuto (cm); in questo caso si è valutato lo spessore dei vari orizzonti riconosciuti entro 100 cm escludendo il substrato geologico nei suoli di collina quando presente entro questa profondità;

"rm": volume occupato dallo scheletro (es ghiaia, ciottoli di diametro > 2 mm) contenuta nell'orizzonte genetico.

Potential of the Emilia-Romagna fruit system to store carbon in the first 100 cm of soil (Mg-Ton)



The figure on the right shows the interesting **potential carbon storage capacity of the Emilia-Romagna fruit growing system** by comparing the average soil storage capacity with the hectares of lowland and hillside dedicated to fruit growing.





***Thanks you for attention***



# EU CAP Network cross-visit 'Circular and organic soil management'

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All information on the cross-visit is available on the event webpage:

[https://eu-cap-network.ec.europa.eu/events/eu-cap-network-cross-visit-circular-and-organic-soil-management\\_en](https://eu-cap-network.ec.europa.eu/events/eu-cap-network-cross-visit-circular-and-organic-soil-management_en)

