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Project LIFE13 ENV/ES/000541 Life+ ClimAgri - Best practices for climate change: Integrated strategies for mitigation and adaptation – Results progress

Antonio Holgado-Cabrera
European Conservation Agriculture Federation (ECAAF)

December 5th, 2017



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Some insights about the project

Who?



Instituto de Investigación y Formación Agraria y Pesquera
CONSEJERÍA DE AGRICULTURA, PESCA Y DESARROLLO RURAL



When?

Since June 2014 until December 2018





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Some insights about the project

What

To contribute to the adaptation to climate change of irrigated annual crops while mitigating the effects of this phenomenon.



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Some insights about the project

How

By implementing a set of Best Management Practices (BMPs) which are a climate change mitigating management system and facilitates the adaptation of crops to its effects.



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Best Management Practices of the Project

<p>01 Use of permanent soil cover.</p> 	<p>06 Use of advanced technology (decision-making aid systems, precision agriculture, fleet management, etc.).</p> 
<p>02 Use of minimum soil disturbance practices.</p> 	<p>07 Implementation of optimum and deficit irrigation strategies.</p> 
<p>03 Perform suitable crop rotation/diversification.</p> 	<p>08 Joint consideration of optimised agricultural, technical and financial practices to improve irrigation water management.</p> 
<p>04 Optimisation in the use of agrochemicals.</p> 	<p>09 Implementation of multifunctional margins and retention structures.</p> 
<p>05 Appropriate management of agrochemical products.</p> 	<p>10 Measures for the promotion of biodiversity.</p> 



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List of indicators

	INDICATOR
1	Margin
2	Margin/Work unit
3	Production costs (per kg.)
4	Yield
5	Working time
6	Satisfaction Index
7	Soil Tillage Index
8	Annual soil cover index
9	Organic matter level
10	Crop rotation/Diversification
11	Nitrogen use efficiency
12	Nitrogen productivity
13	Energetic efficiency
14	Energetic productivity
15	Energetic equivalent area



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List of indicators

	INDICATOR
16	Biodiversity areas
17	Ratio natural vegetation area/total area
18	Connection to environmental networks
19	Biodiversity structures
20	Use of PPPs close to the water streams
21	GHG level
22	Erosion risk
23	Fuel consumption
24	Irrigation efficiency
25	Escape and resilience



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Some insights about the project

Where

Pilot Scale:

- Guadalquivir Basin (Spain)

Global Scale:

- European Network of Demo Farms:
 - Andalusia (Spain)
 - Lombardy and Emilia Romagna (Italy)
 - Alentejo (Portugal)
 - Thessaly (Greece)



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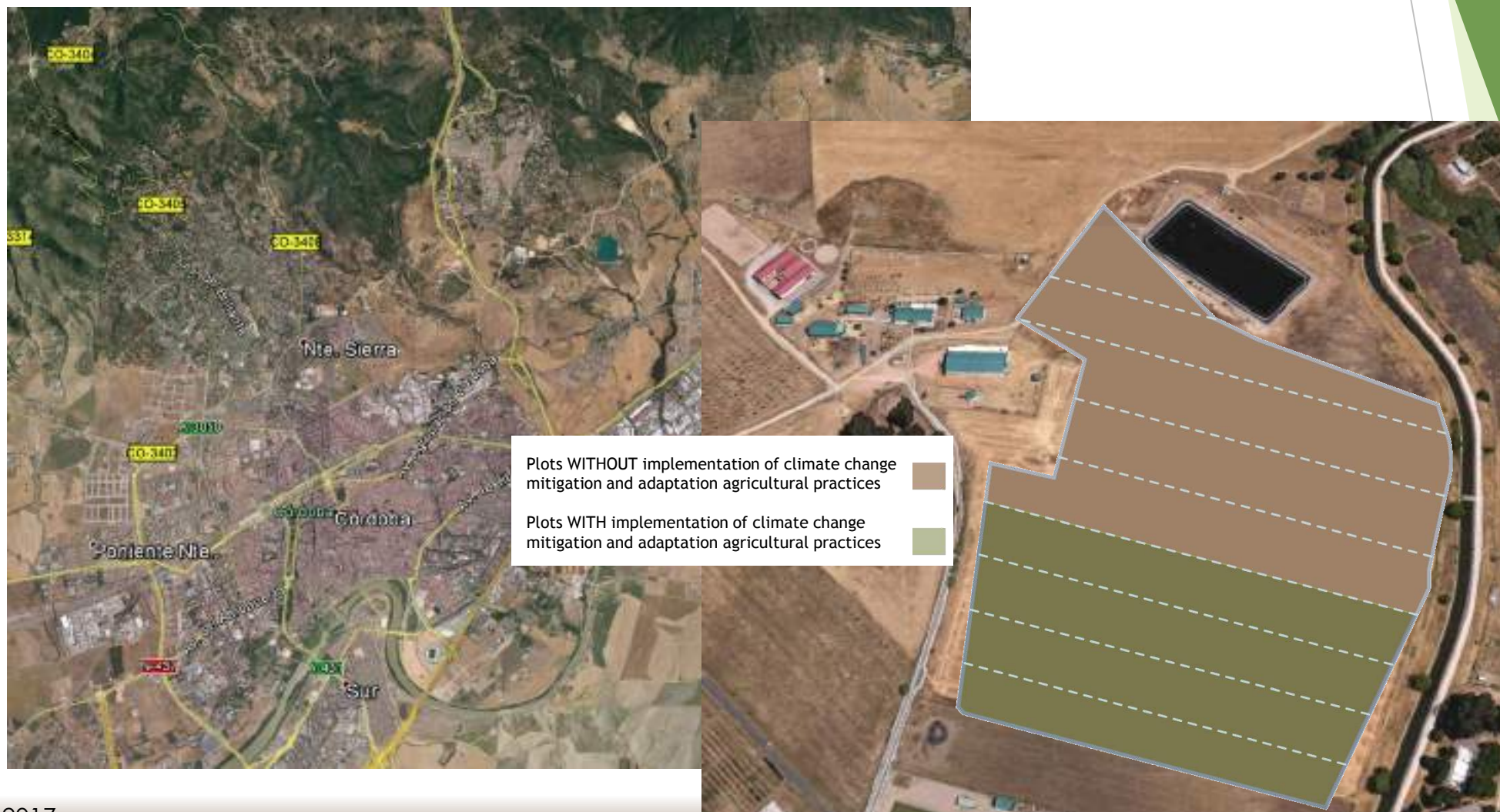
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Pilot scale: Demonstrative farm





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Pilot scale: Demonstrative farm



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Pilot scale: Demonstration experiments





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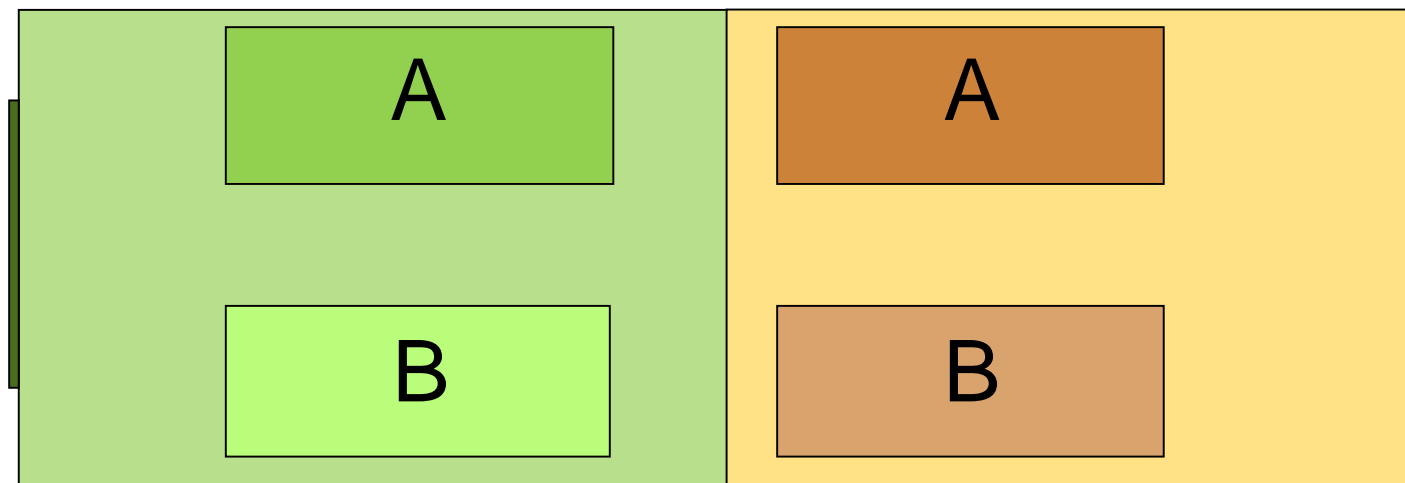


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Pilot scale: Demonstration experiments

CURRENT CLIMATIC CONDITIONS

FUTURE CLIMATIC CONDITIONS



- A - Plots without mitigating and adaptive management practices
- B - Plots with mitigating and adaptive management practices



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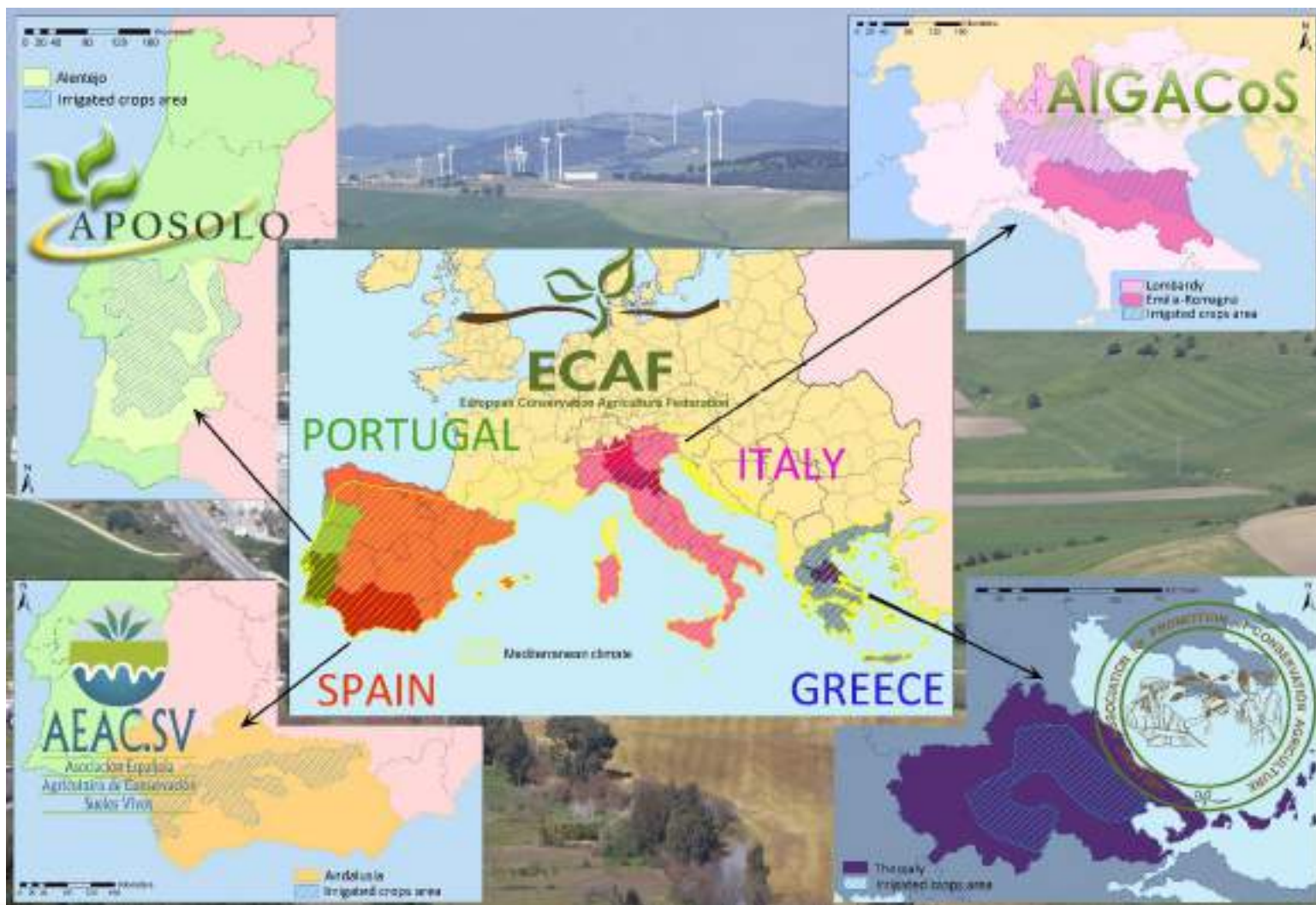
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Global scale





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RESULTS

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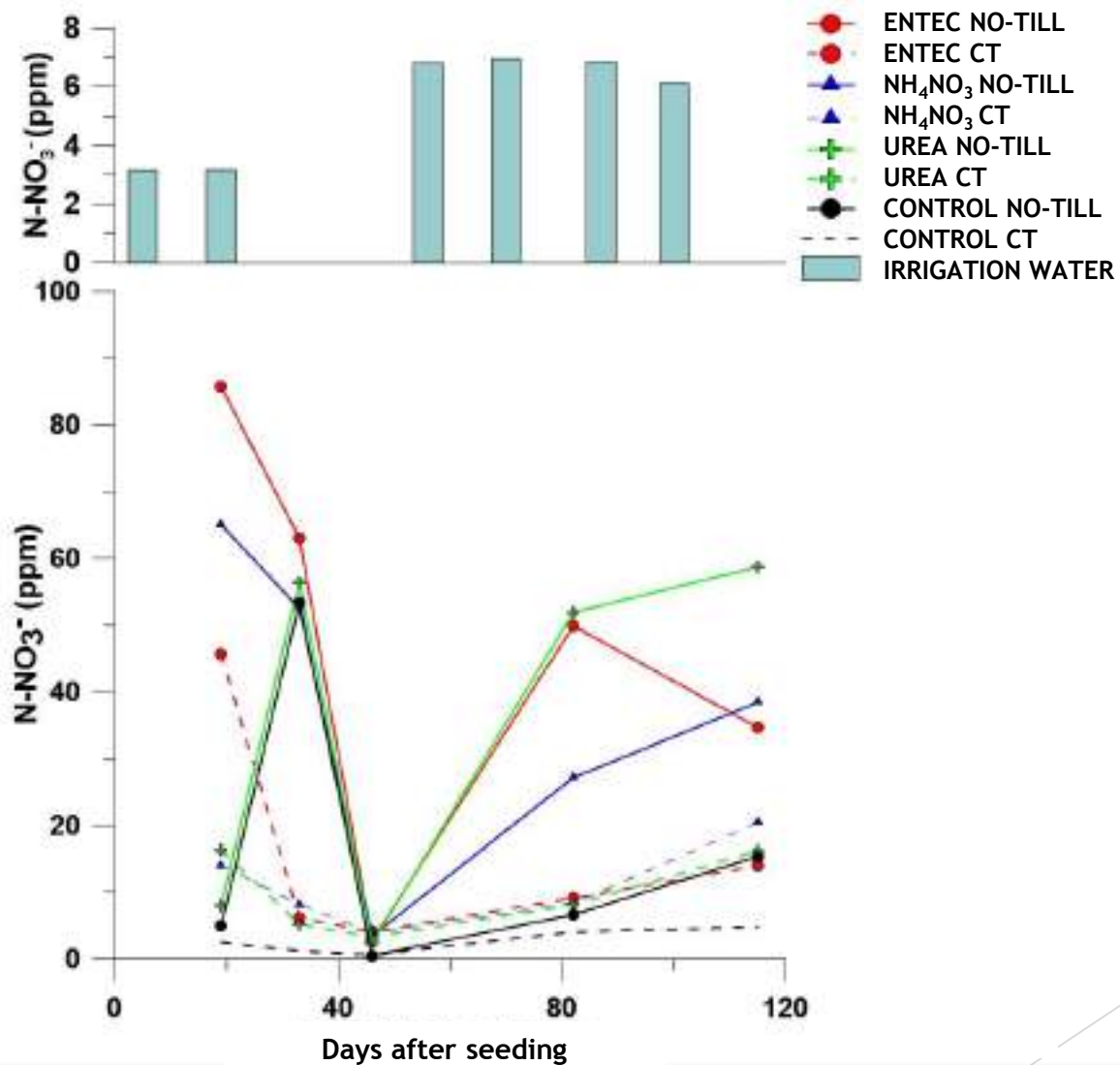
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Nitrates





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Nitrous Oxide



Installation and placement of chambers according to the method described by Ryden and Rolston (1983)

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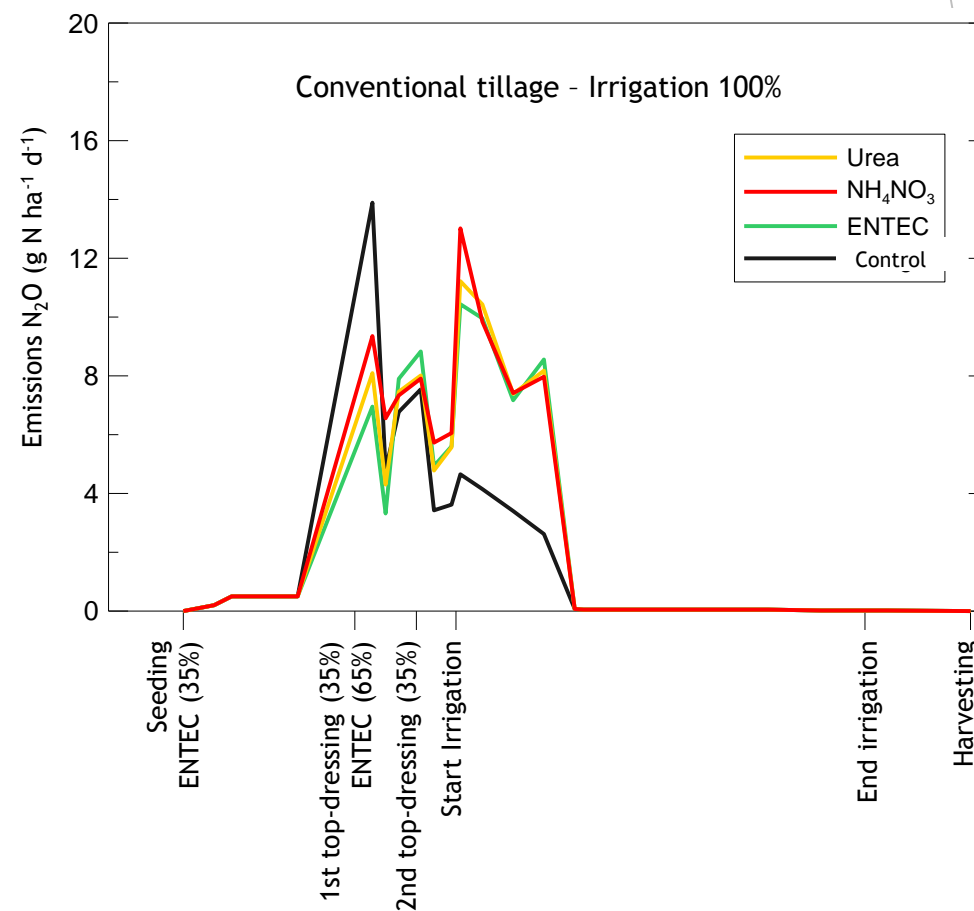
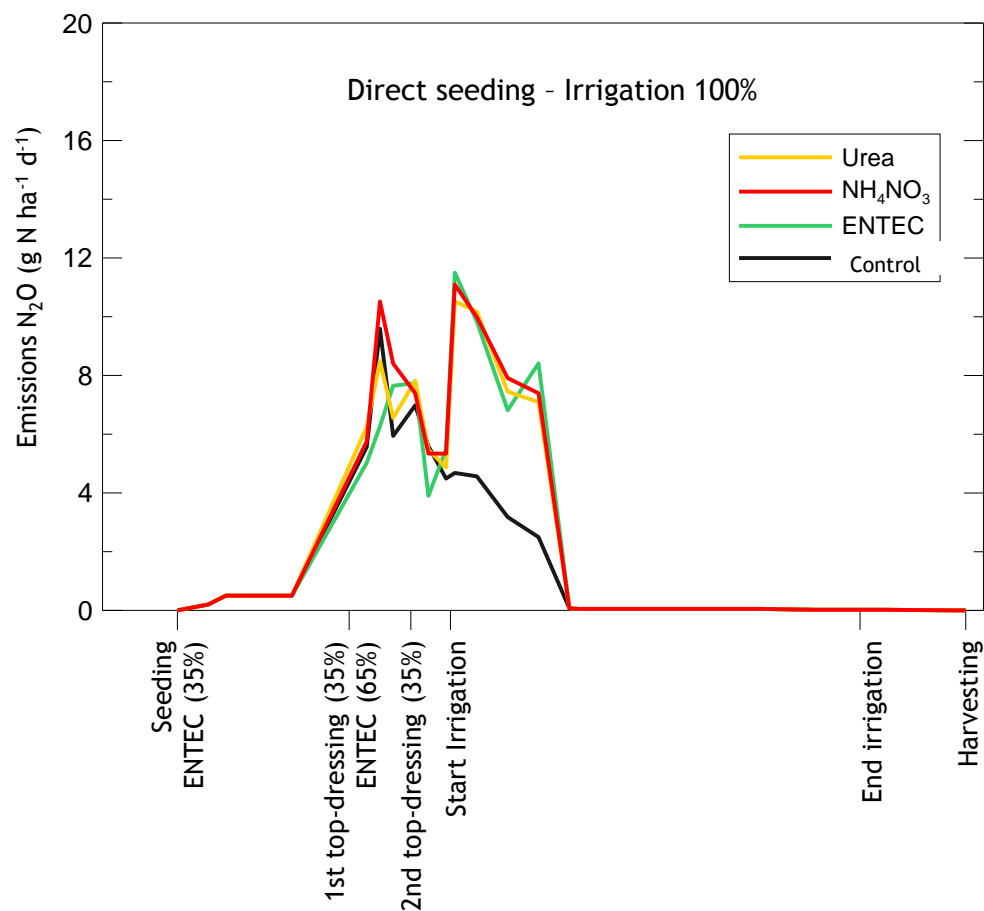
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Nitrous Oxide





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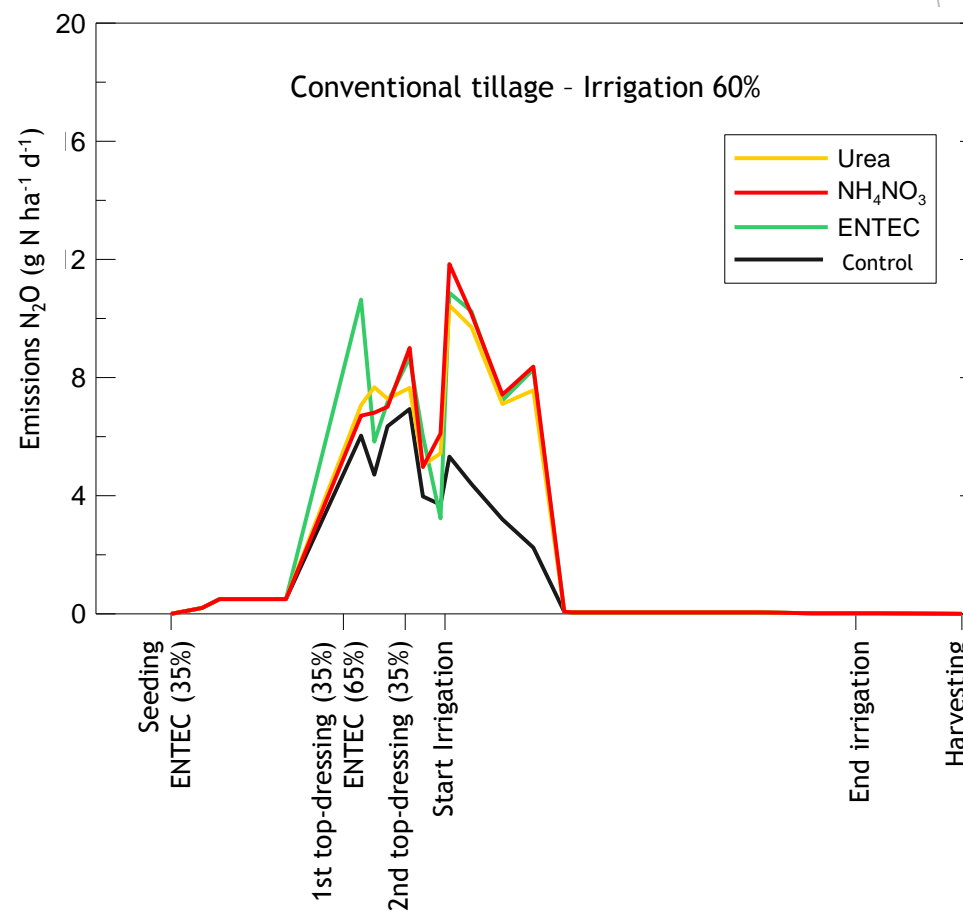
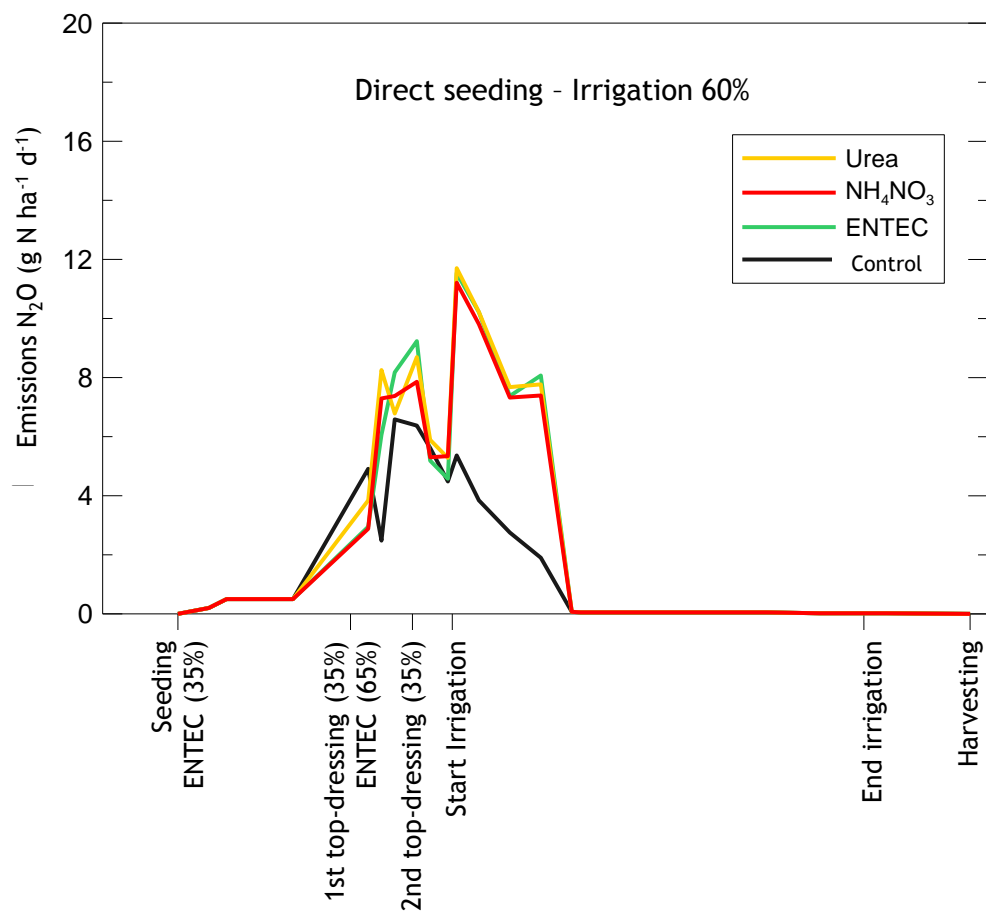
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Nitrous Oxide





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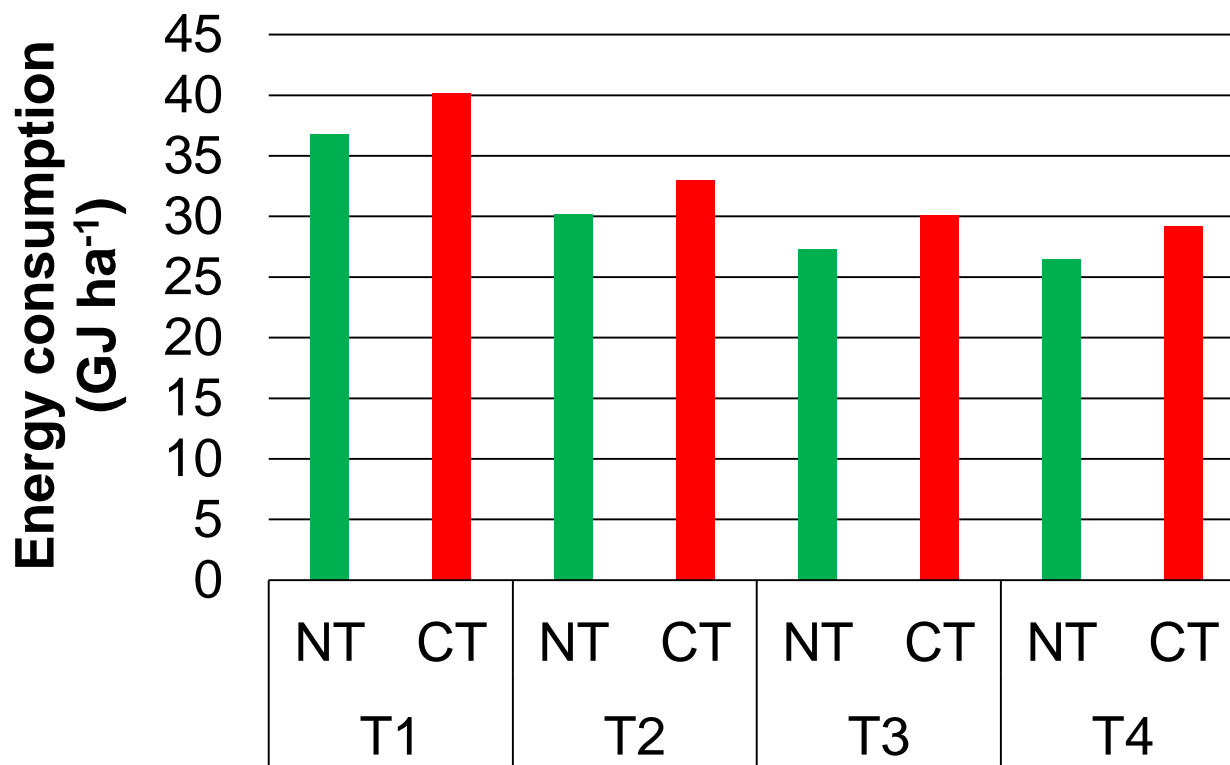
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Energy Consumption



T1: Conventional fertilization and irrigation.

T2: Conventional irrigation. Fertilization according to real needs of the crop.

T3: Fertilization and irrigation according to real needs of the crop.

T4: Fertilization and irrigation according to real needs of the crop.

Fertilization includes variable distribution of fertilizers according to previous year productions.





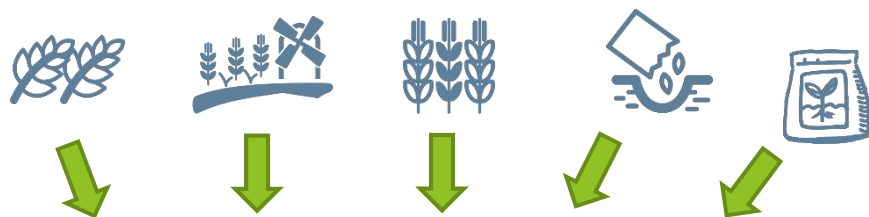
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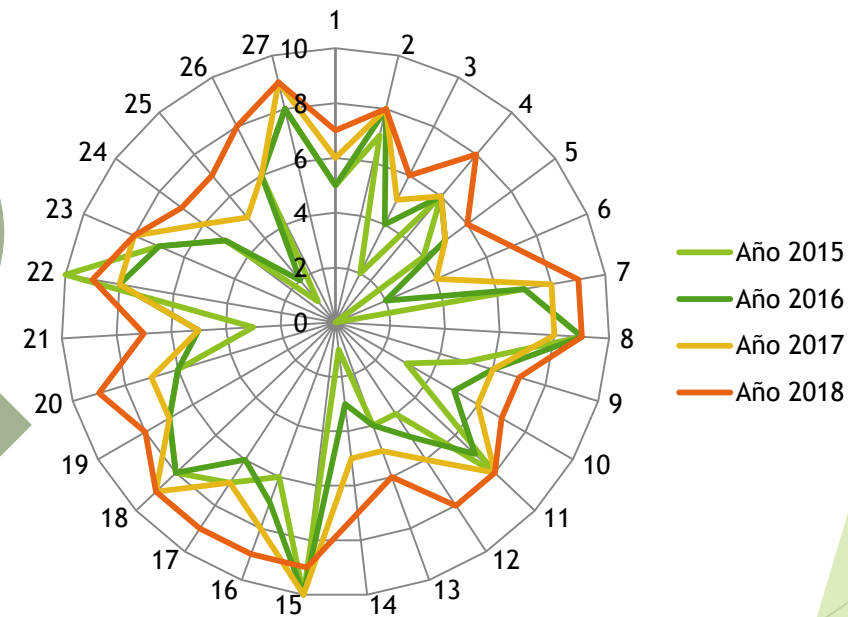
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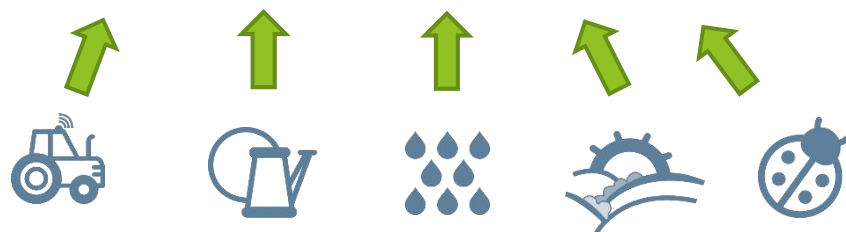
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Indicators



- Año 2015
- Año 2016
- Año 2017
- Año 2018



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GIS CLIMAGRI

The screenshot shows the CLIMAGRI web application interface. The browser address bar displays the URL: 136.243.31.143:8099/climagri/produzioni/lat/957. The page title is 'climagri' and the user is logged in as 'RACOLTO'. The main content area is titled 'Prodotti' and contains a table of agricultural products. The table has the following columns: Nome, Tipologia, Prezzo (€/kg - €), Energia (MJ/kg - MJ/t), Azoto (%), Fosforo (%), Potassio (%), Descrizione, and Azioni. The table lists several products, including 'Acqua de iriego', 'Gifosato 36%', 'LAUDIS (Temboriona 4,4%)', 'LUMAX (1,55% mesosolona+26,2% S-metoprololo+16,9% terbuzina)', 'Semilla maiz', and 'urea (45-0-0)'. The interface also includes a sidebar with navigation options for 2015, a search bar, and a Windows taskbar at the bottom.

Nome	Tipologia	Prezzo (€/kg - €)	Energia (MJ/kg - MJ/t)	Azoto (%)	Fosforo (%)	Potassio (%)	Descrizione	Azioni
Acqua de iriego	Agrofarmaco	EUR 0,00	0	0	0	0		
Gifosato 36%	Agrofarmaco	EUR 4,50	163,44	0	0	0		
LAUDIS (Temboriona 4,4%)	Agrofarmaco	EUR 26,00	13,52	0	0	0		
LUMAX (1,55% mesosolona+26,2% S-metoprololo+16,9% terbuzina)	Agrofarmaco	EUR 16,00	148,44	0	0	0		
Semilla maiz	Semante	EUR 2,70	100	0	0	0		
urea (45-0-0)	Fertilizzante	EUR 0,40	35,24	48	0	0		



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CLIMAGRI - Administraci... x

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Home Configurazione

RACOLTO : [Logout]

INDICATORI

- 1 - Margine
- 2 - Margine/unità di lavoro
- 3 - Costi di produzione
- 4 - Produzione
- 5 - Tempo di lavoro
- 6 - Indice di soddisfazione
- 7 - Indice di lavorazione del suolo
- 8 - Indice di copertura annuale del suolo
- 9 - Livello di sostanza organica
- 10 - Rotazioni/Diversificazione colturale
- 11 - Efficienza d'uso dell'azoto
- 12 - Produttività dell'azoto
- 13 - Efficienza energetica
- 14 - Produttività energetica
- 15 - Area energetica equivalente
- 16 - Area di Biodiversità
- 17 - Rapporto Superficie vegetazione naturale/Superficie totale
- 18 - Connessione a reti ambientali
- 19 - Strutture di biodiversità
- 20 - Uso di agrofarmaci in prossimità di corsi d'acqua
- 21 - Livello di gas ad effetto serra
- 22 - Rischio di erosione
- 23 - Consumo di carburante
- 24 - Efficienza irrigua
- 28 - Evitamento e resilienza

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climagri Rapporto stagionale: 2015

Azienda: Cascina Casoni

Parcella: Cascina Casoni LIFE

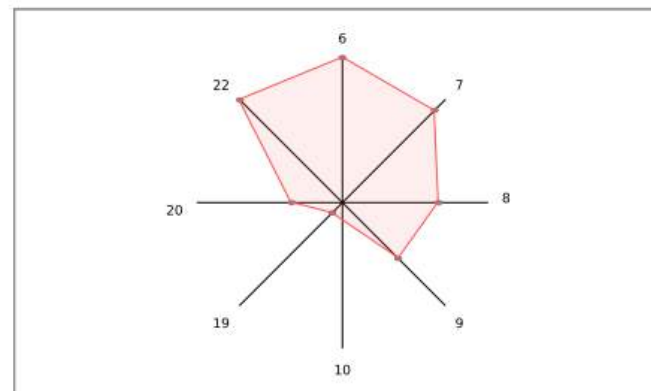


INFORMAZIONI

Nome: Cascina Casoni LIFE
Superficie: 1.54 ha
Coltura: Maiz

INDICATORE	INDICATORI VALORE	COMMENTI
1 - Margine	1,733.61	
2 - Marginalità di lavoro	263.07	
3 - Costi di produzione	546.39	
4 - Produzione	15,000.00	
5 - Tempo di lavoro	6.59	
6 - Indice di soddisfazione	10.00	
7 - Indice di lavorazione del suolo	2.00	
8 - Indice di copertura annuale del suolo	0.66	
9 - Livello di sostanza organica	2.83	
10 - Rotazione/Diversificazione colturale	-	Sin datos (no esiste campaña anterior)
11 - Efficienza d'uso dell'acqua	4.09	
12 - Produttività dell'azoto	166.10	
13 - Efficienza energetica	22.62	
14 - Produttività energetica	1.51	
15 - Area energetica equivalente	0.06	
16 - Area di Biodiversità	0.00	
17 - Rapporto Superficie vegetazione naturale/Superficie totale	0.00	
18 - Connesione a reti ambientali	0.00	
19 - Strutture di biodiversità	0.10	
20 - Uso di agrofarmaci in prossimità di corsi d'acqua	35.00	
21 - Livello di gas ad effetto serra	-	Sin datos (no existe campaña anterior)
22 - Rischio di erosione	0.00	
23 - Consumo di carburante	25.80	
24 - Efficienza irrigua	100.00	
28 - Evitamento e resilienza	20.17	

climagri Rapporto stagionale: 2015



INDICATORE	GRAFICO (valori normalizzati) VALORE*	COMMENTI
6 - Indice di soddisfazione	100.00	
7 - Indice di lavorazione del suolo	90.00	
8 - Indice di copertura annuale del suolo	66.44	
9 - Livello di sostanza organica	54.43	
10 - Rotazione/Diversificazione colturale	-	Sin datos (no existe campaña anterior)
19 - Strutture di biodiversità	10.00	
20 - Uso di agrofarmaci in prossimità di corsi d'acqua	35.00	
22 - Rischio di erosione	100.00	

* I valori mostrati nel grafico sono normalizzati tra 0 e 100. Più è elevato il valore normalizzato, maggiore è la sostenibilità del sistema agricolo di riferimento.



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What results do we expect to reach at the end of the project?

- **Reduction of 20% of GHGs emissions and increase 35% atmospheric carbon sequestration in the soil**
- **Better adaptation of crops** because of a higher efficiency in the use of water, escape of crop cycle from climatic stress conditions and improvement of the response capacity of the crop.
- **Improvement of sustainability** of farms based in the measurement of environmental, economic and social indicators.
- **Improvement of knowledge** of agriculture sector stakeholders related to climate change and its influence in agriculture.
- **Guide of Best Management Practices**



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Guide of Best Management Practices



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LA RINGRAZIO MOLTO PER L'ATTENZIONE

Ulteriori informazioni su www.climagri.eu
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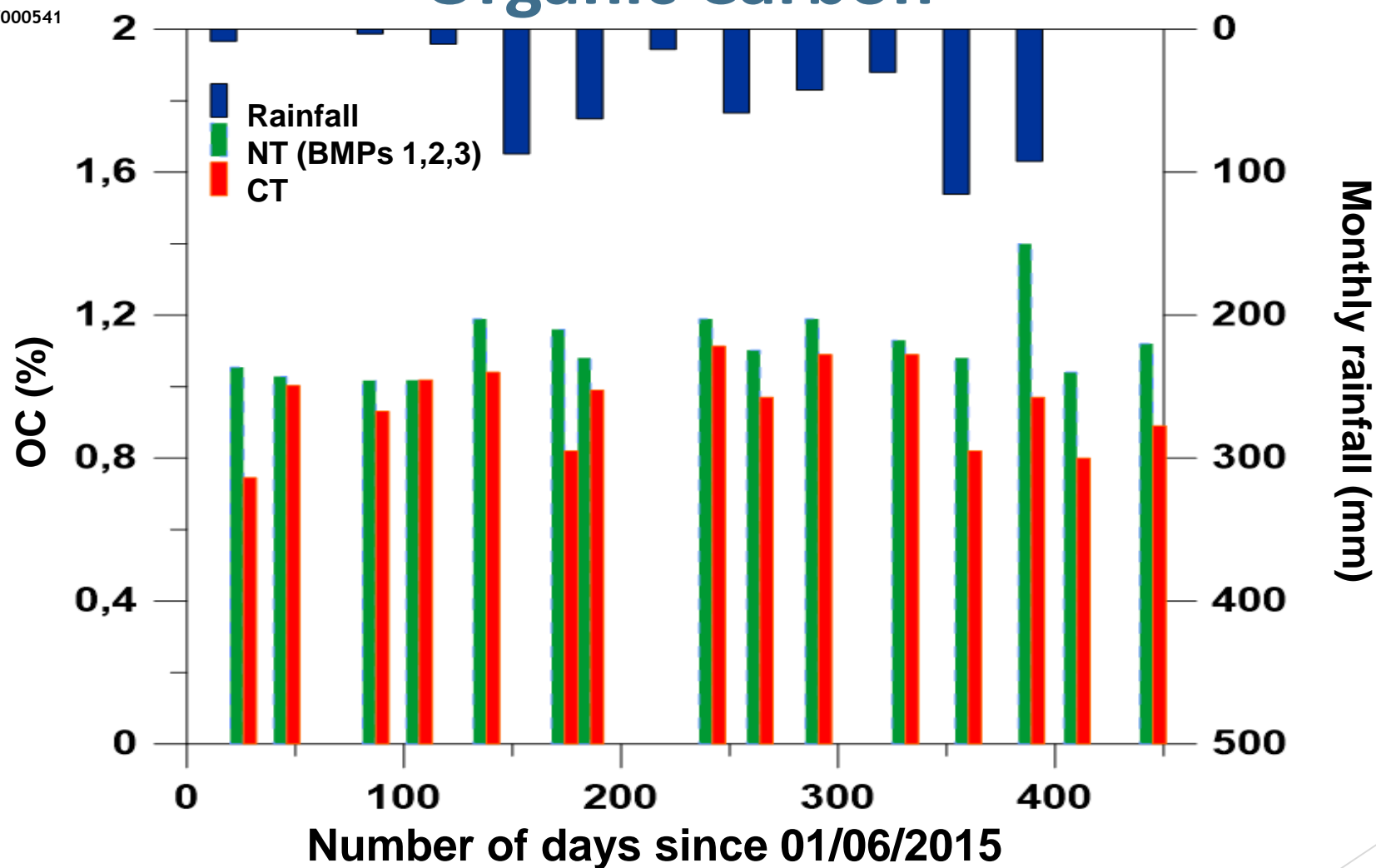
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Organic Carbon



Organic Carbon (OC) content in the top 20 cm of soil.
No-Till (NT) (BMPs 1,2,3), Conventional Tillage (CT).



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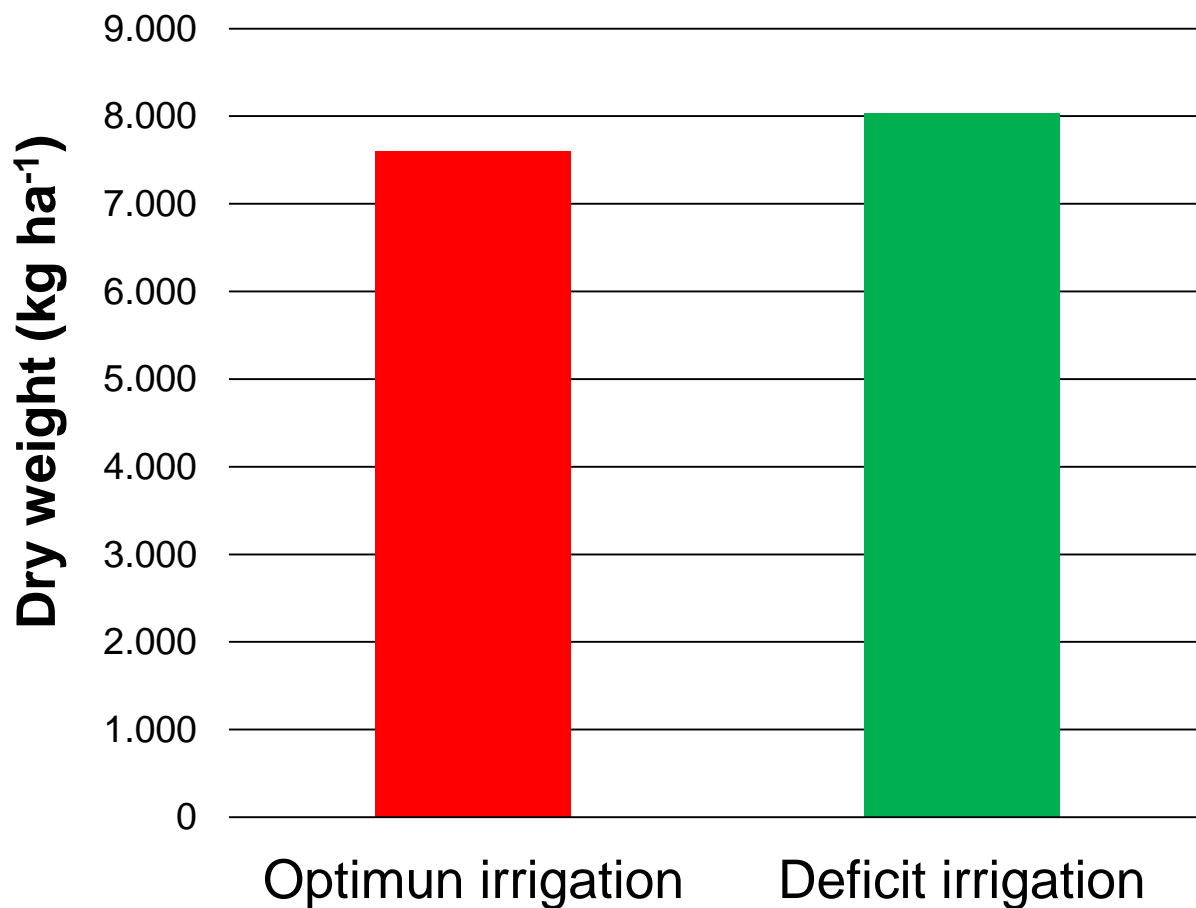
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Irrigation Strategies



Maize production under two irrigation strategies (optimum and deficit irrigation) (BMP 7).

