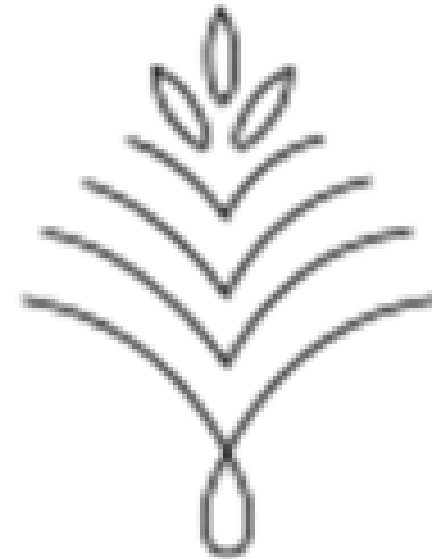


the CREA-Italy research areas & synergies

Marcello Mastrorilli
Council for Agricultural Research and Economics

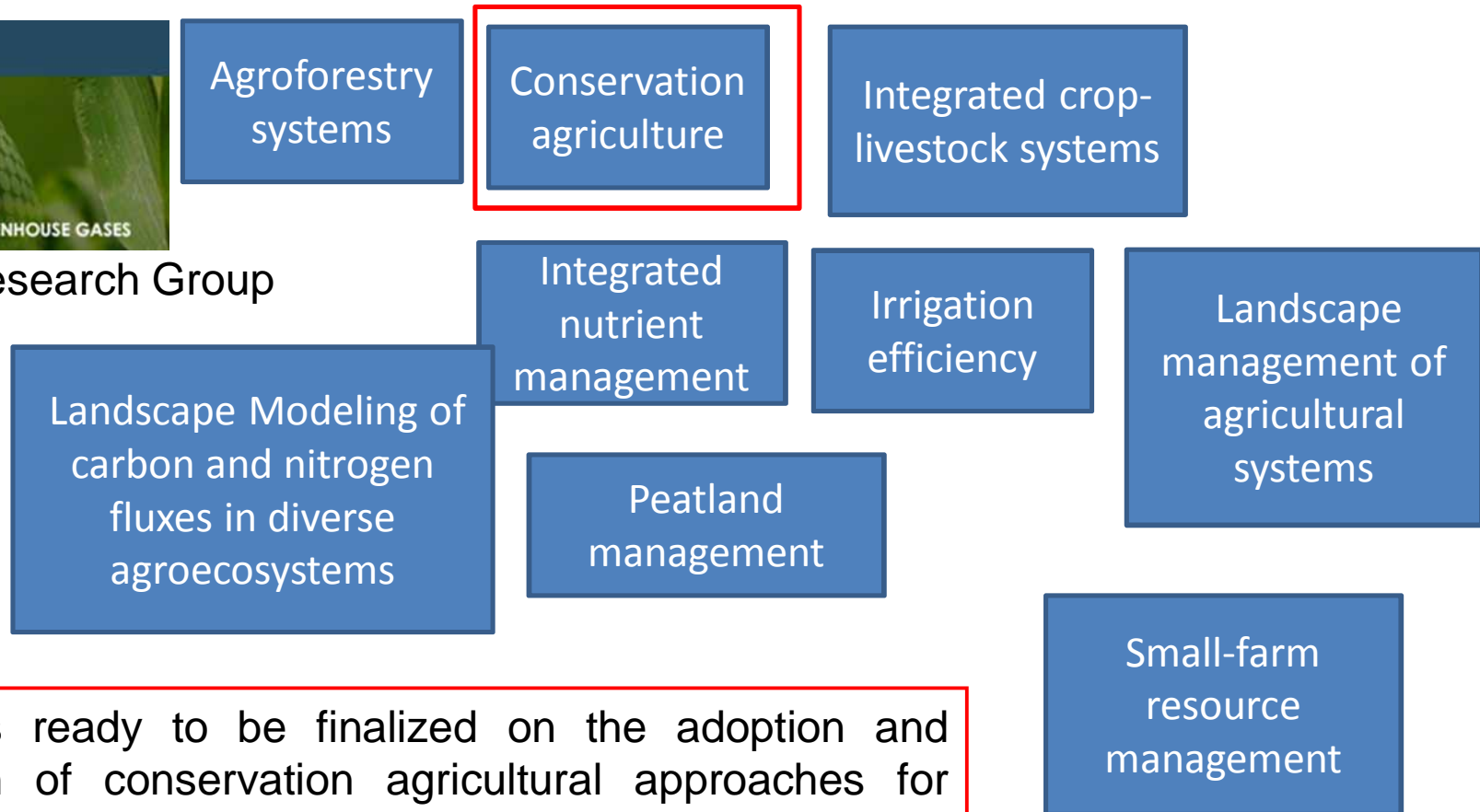


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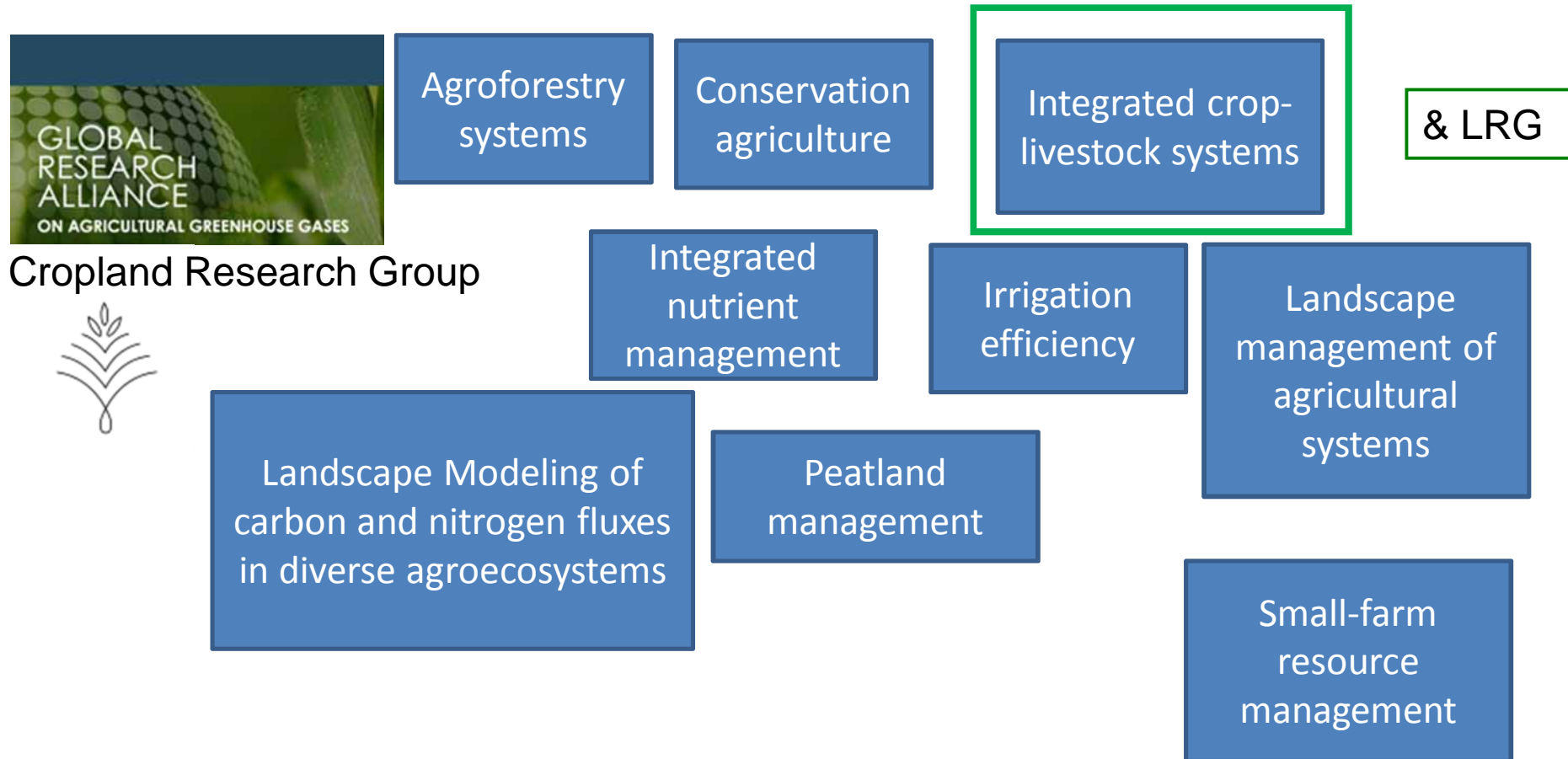




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A draft is ready to be finalized on the adoption and adaptation of conservation agricultural approaches for crop production across a diversity of ecoregions around the world to sequester soil organic carbon, mitigate greenhouse gas emissions, enhance soil quality, and improve agricultural resiliency



A COST action focused on the Mediterranean area is starting to be built. It involves Countries from North & East Europe



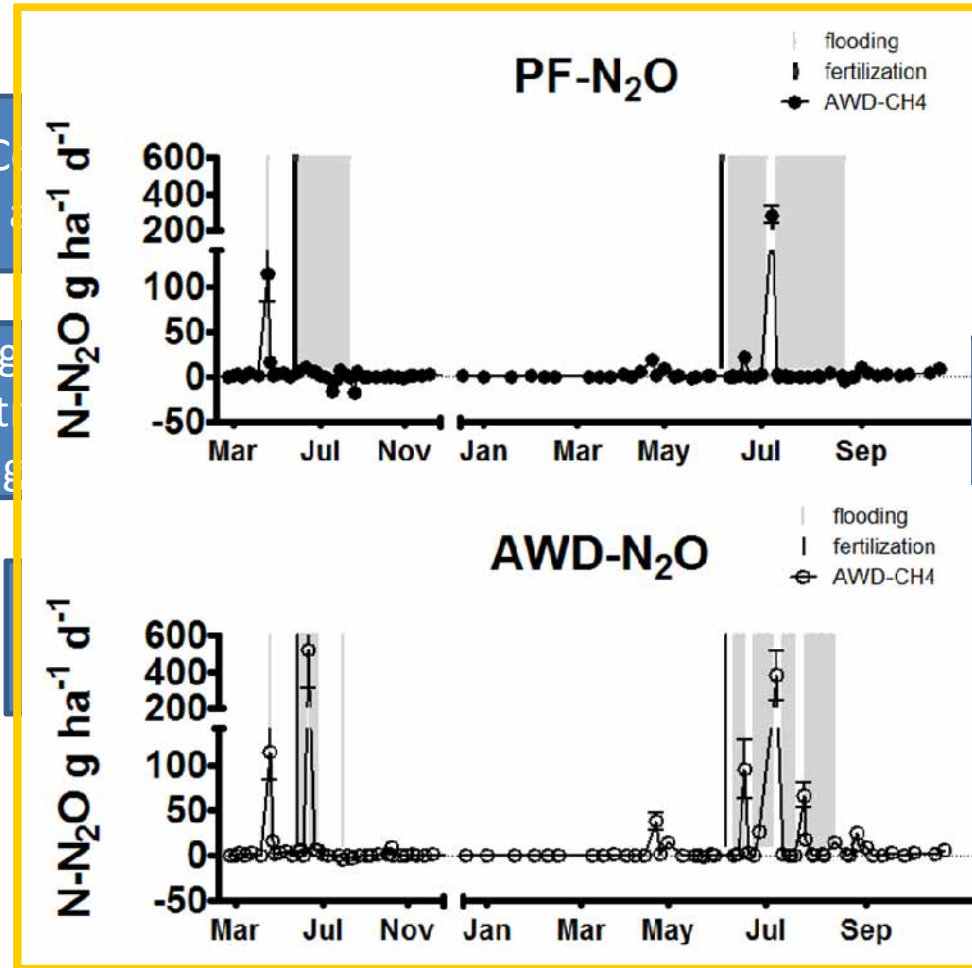
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Landscape Modeling of
carbon and nitrogen fluxes
in diverse agroecosystems

Agroforestry
systems

Integ
nut
manag



Field monitoring



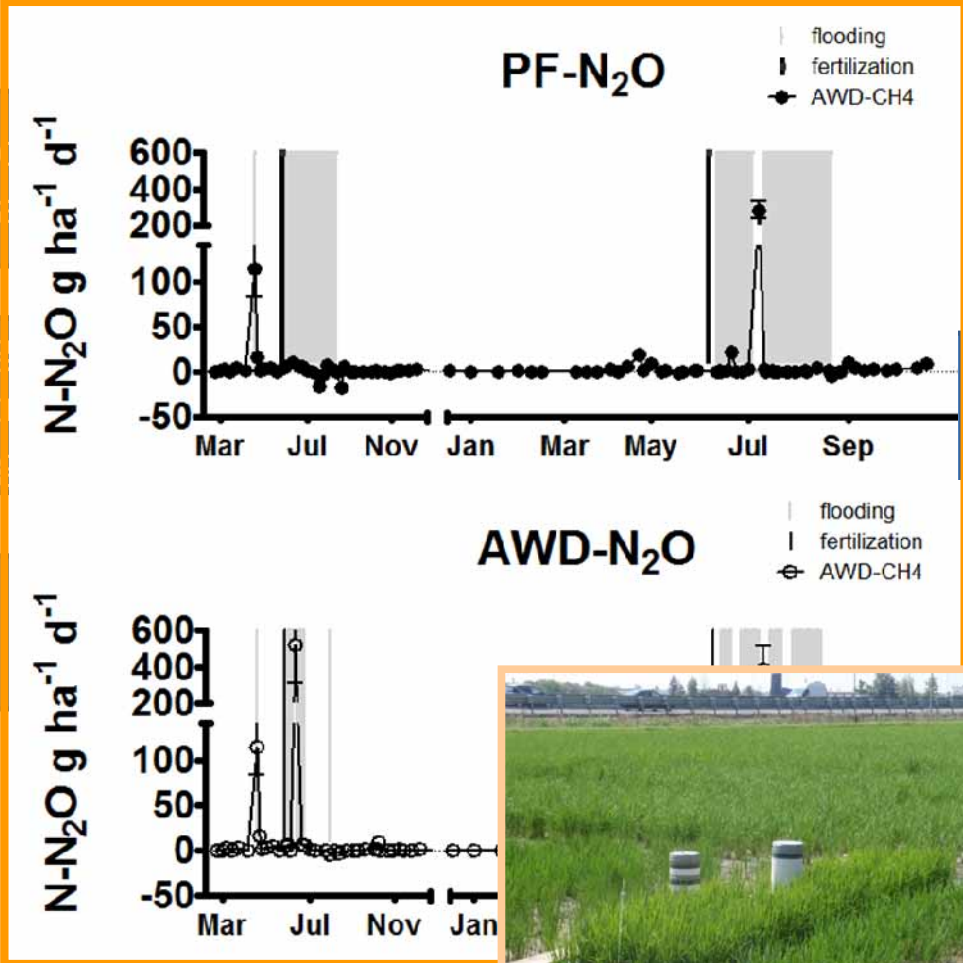
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Landscape Modeling of carbon and nitrogen fluxes in diverse agroecosystems

Agroforestry systems

Integrating nutrient management



Field monitoring: the case of rice

the potential CREA-Italy research areas for synergies



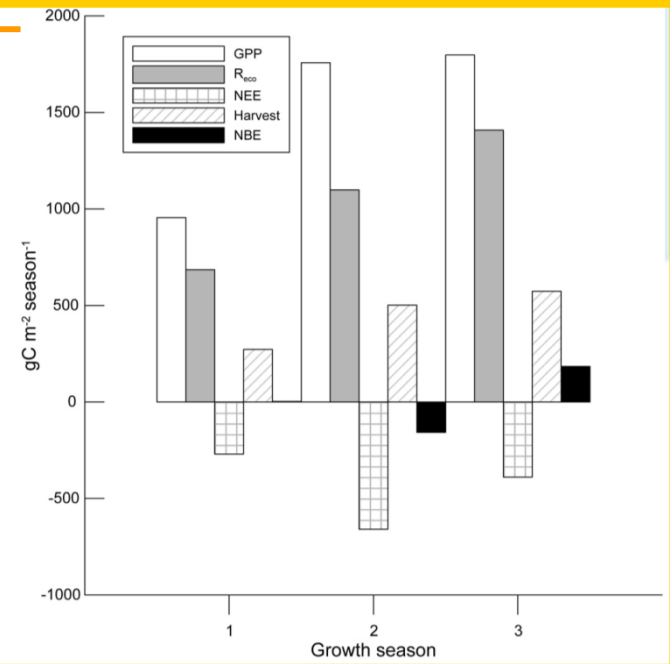
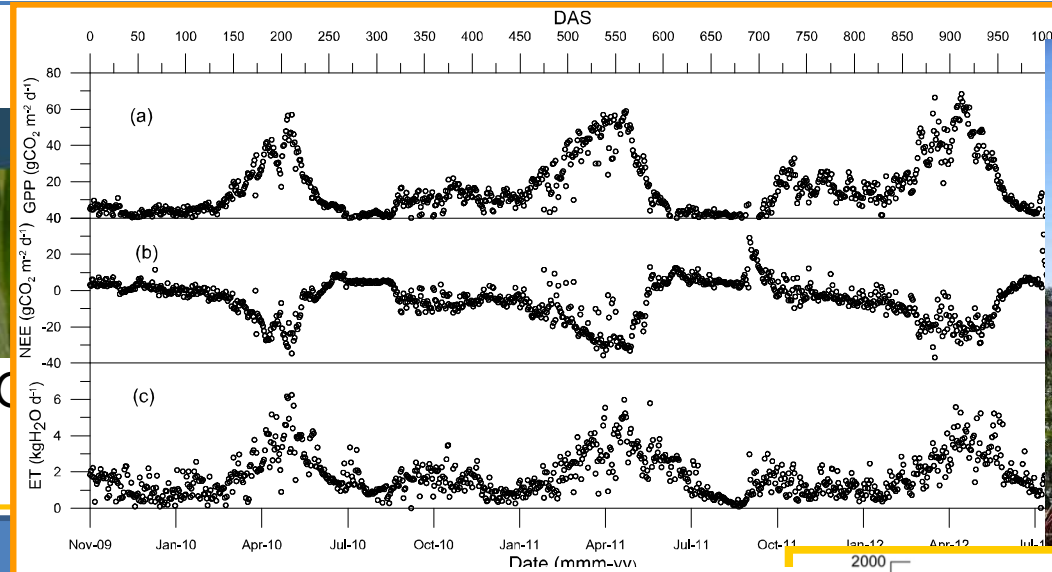
Cropland Research C



Landscape Modeling of carbon and nitrogen fluxes in diverse agroecosystems

Rana et al, 2016.
Agricultural and Forest Meteorology

Field monitoring: the case of Cardoon – C balance



the potential CREA-Italy research areas for synergies

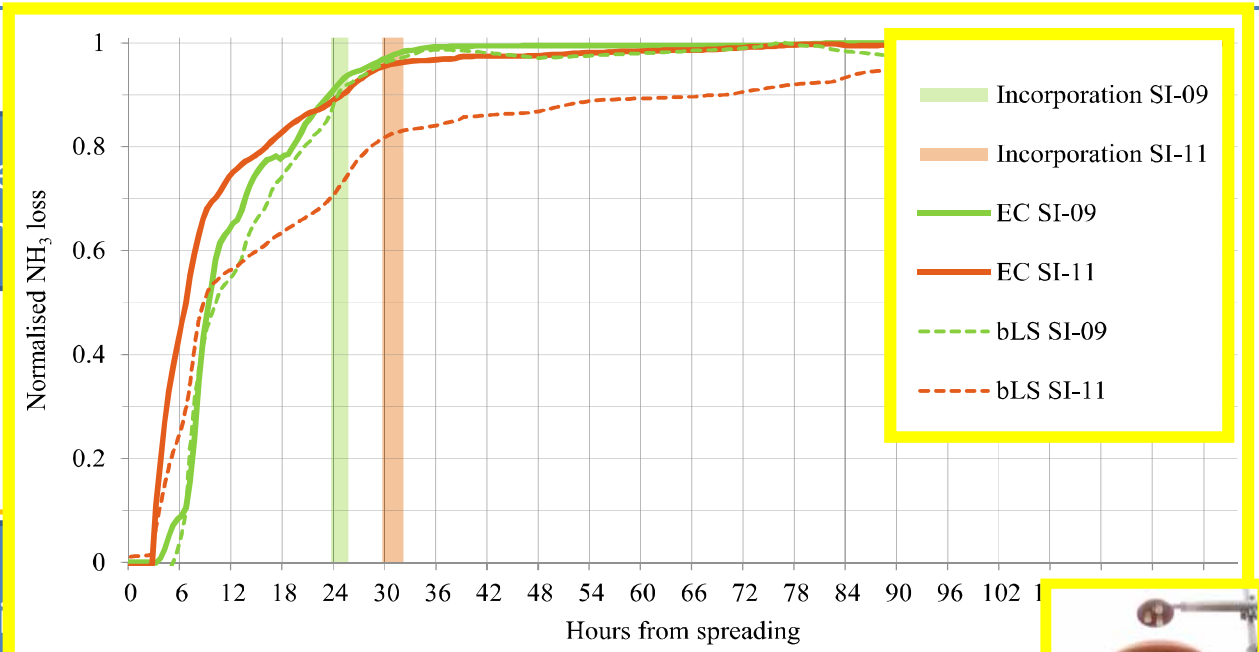


Agrofore
system

Cropland Research Group



Landscape Model
carbon and nitrogen fluxes
in diverse agroecosystems



Ferrara et al, 2016. *Agriculture, Ecosystems and Environment*

Field monitoring: the case of slurry
(measurements vs modeling)

Landscape Modeling of carbon and nitrogen fluxes in diverse agroecosystems

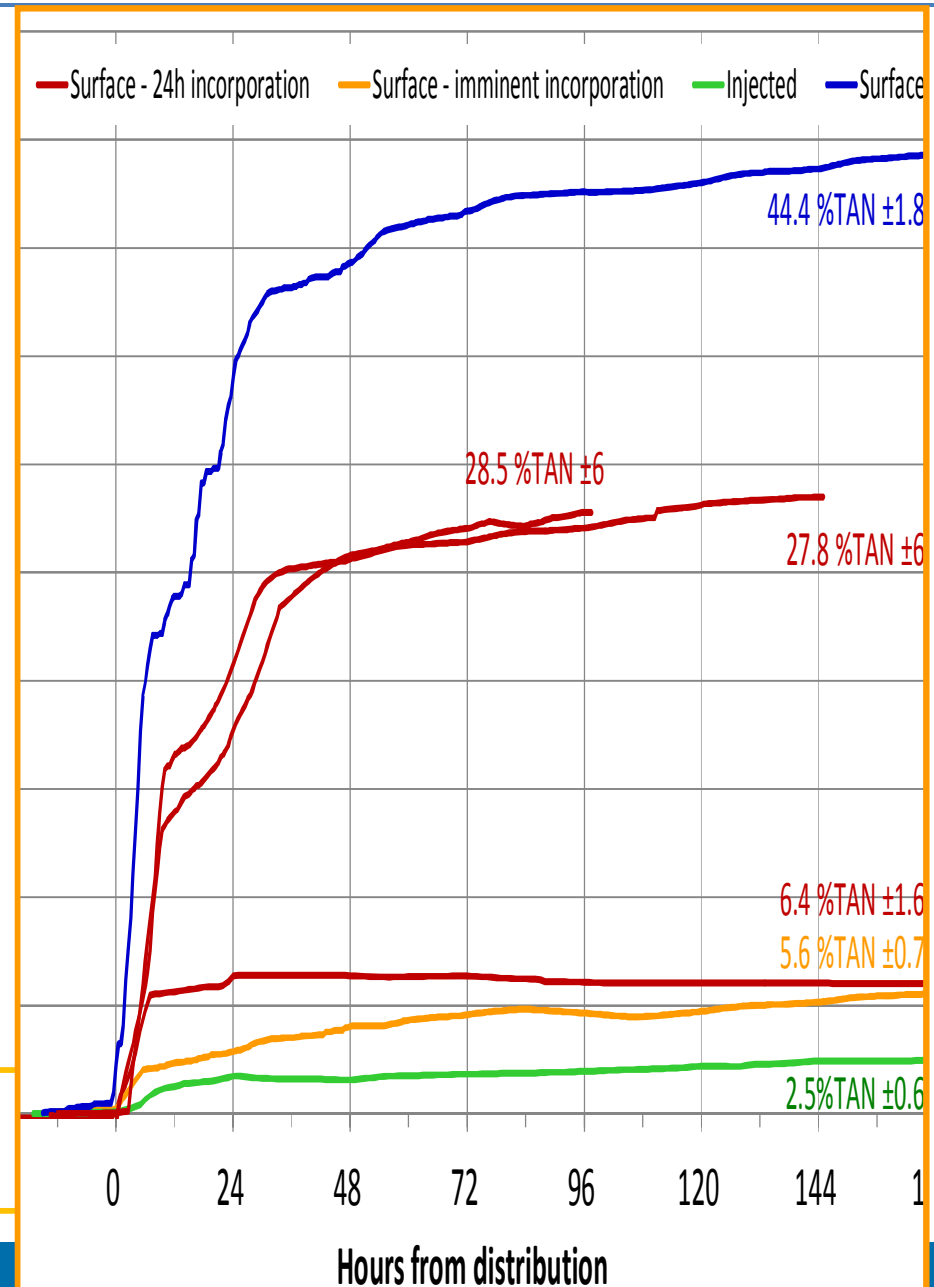


Carrozzi et al, 2013.
Science of the Total Environment,



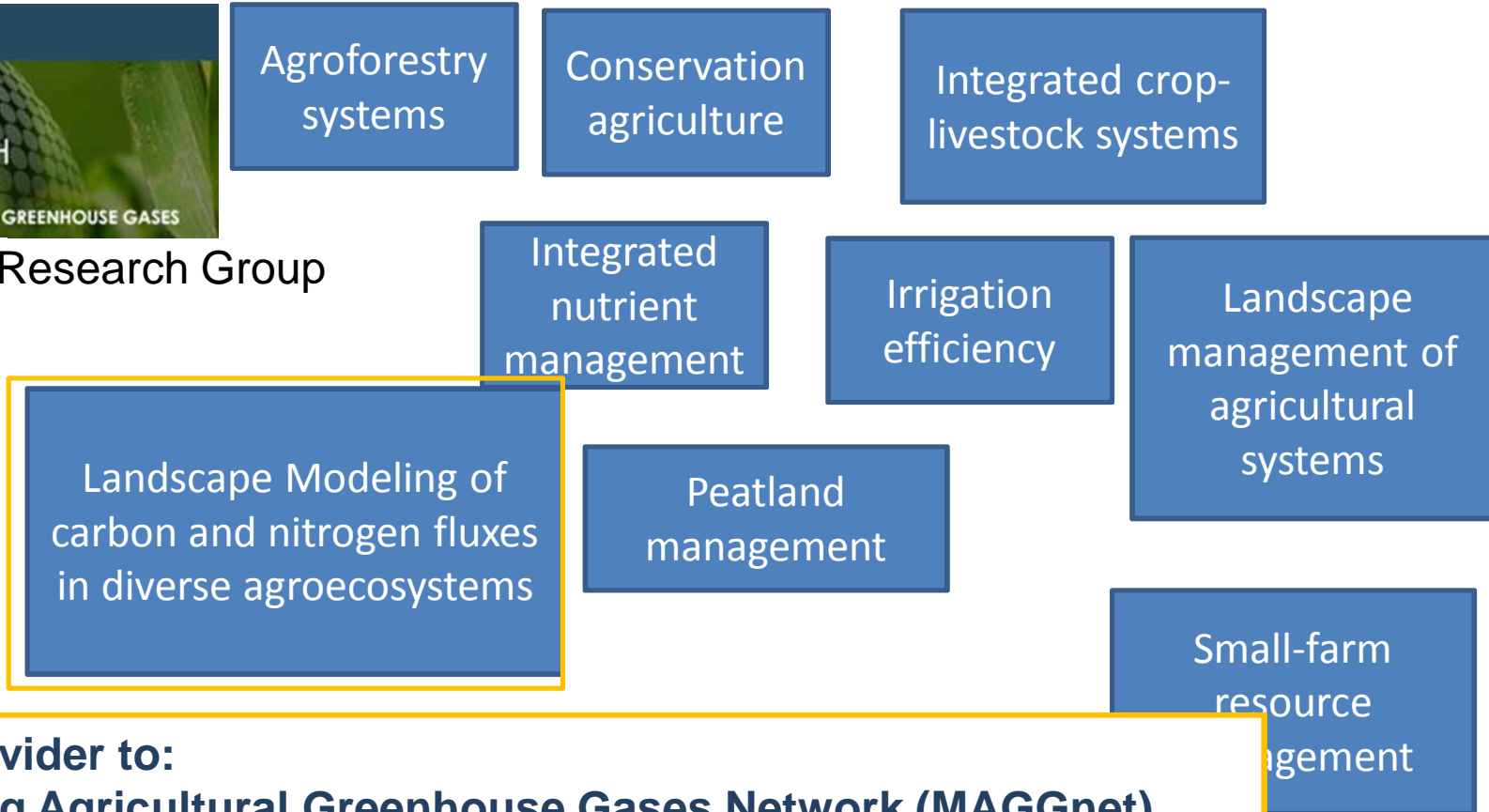
Field monitoring: the case of slurry (mitigation NH₃ emissions)

Marcello Mastrorilli





Cropland Research Group

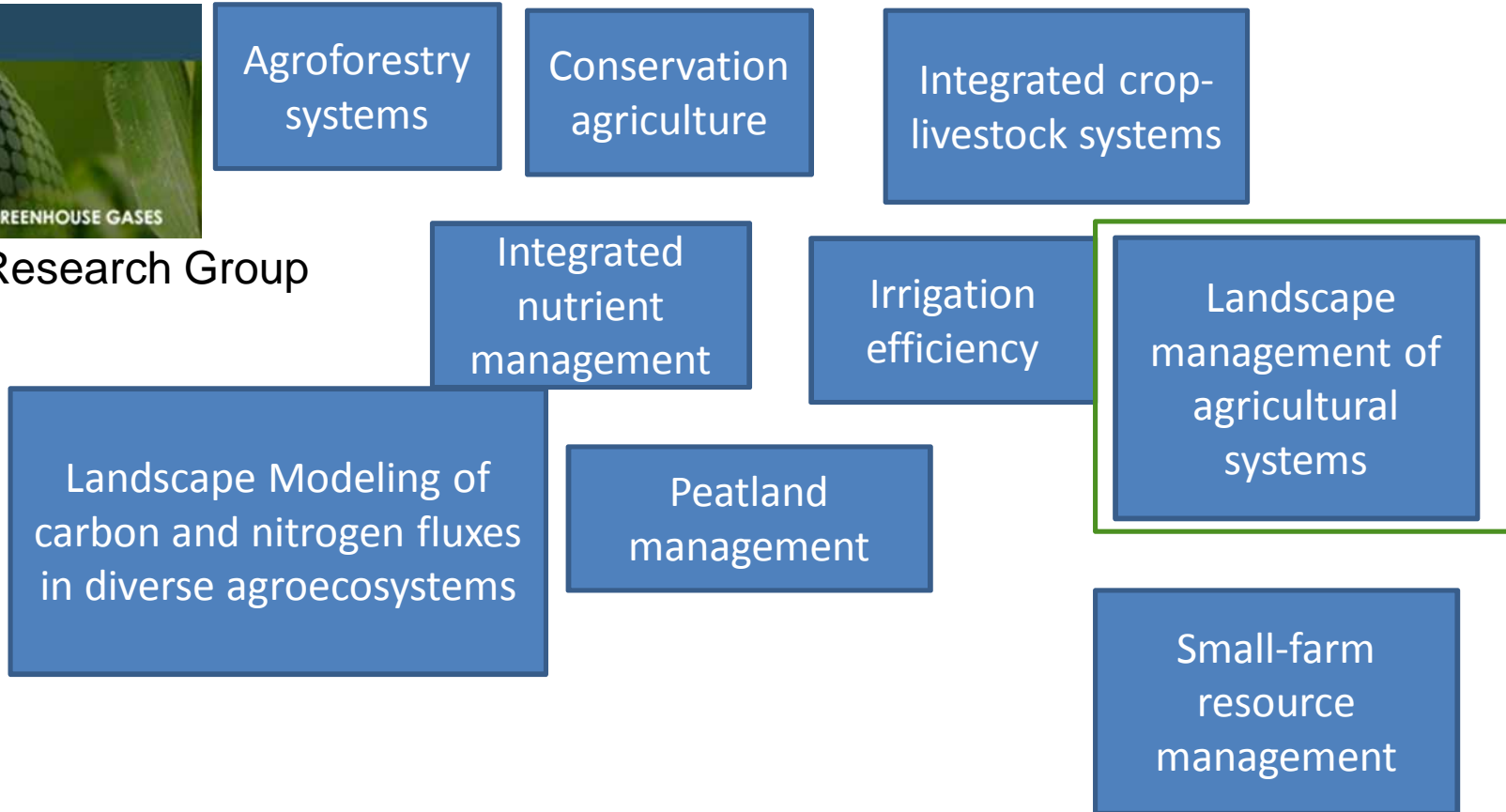


**Data provider to:
Managing Agricultural Greenhouse Gases Network (MAGGnet)**

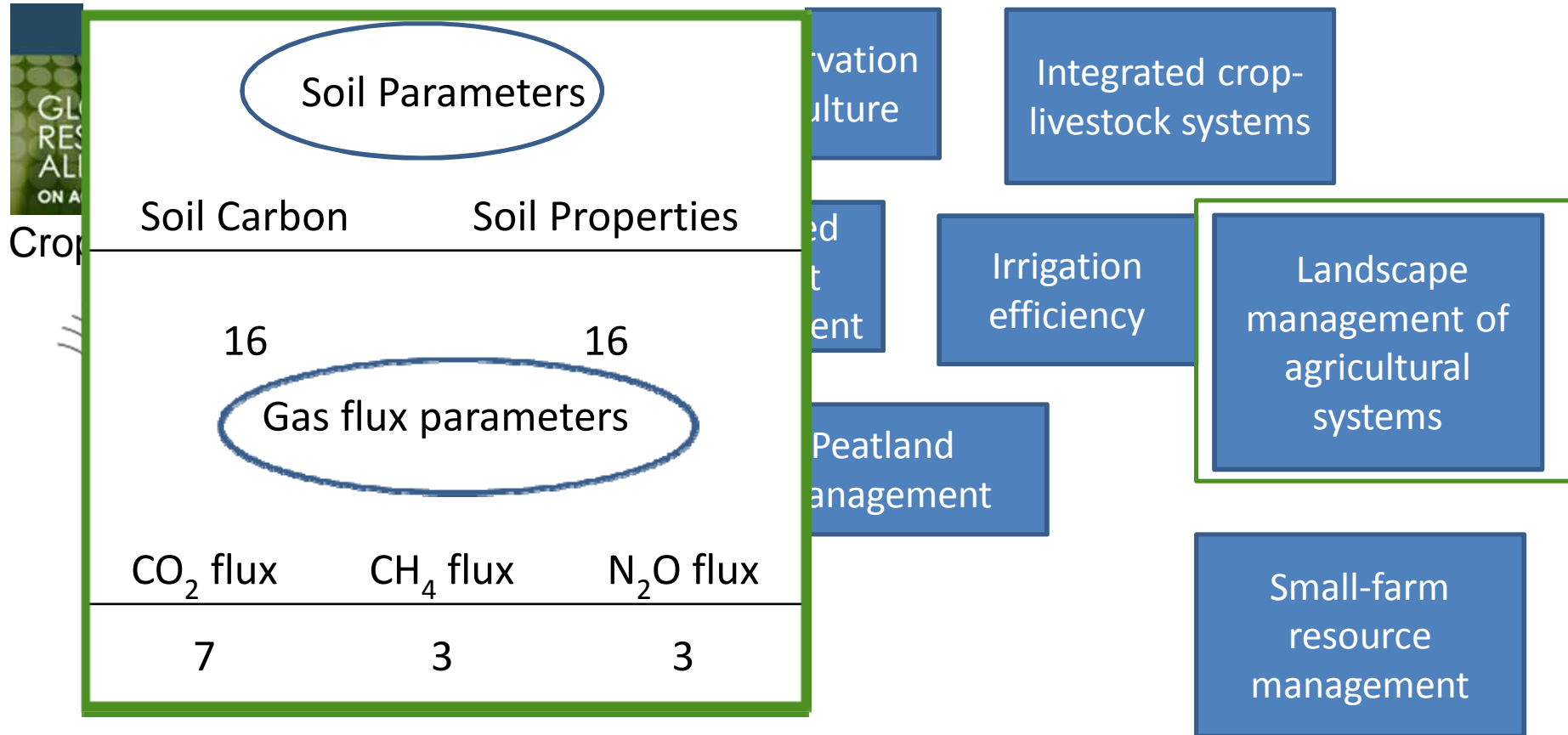
MAGGnet is an international greenhouse gas network of experimental sites and research expertise within the Global Research Alliance Croplands Research Group



Cropland Research Group

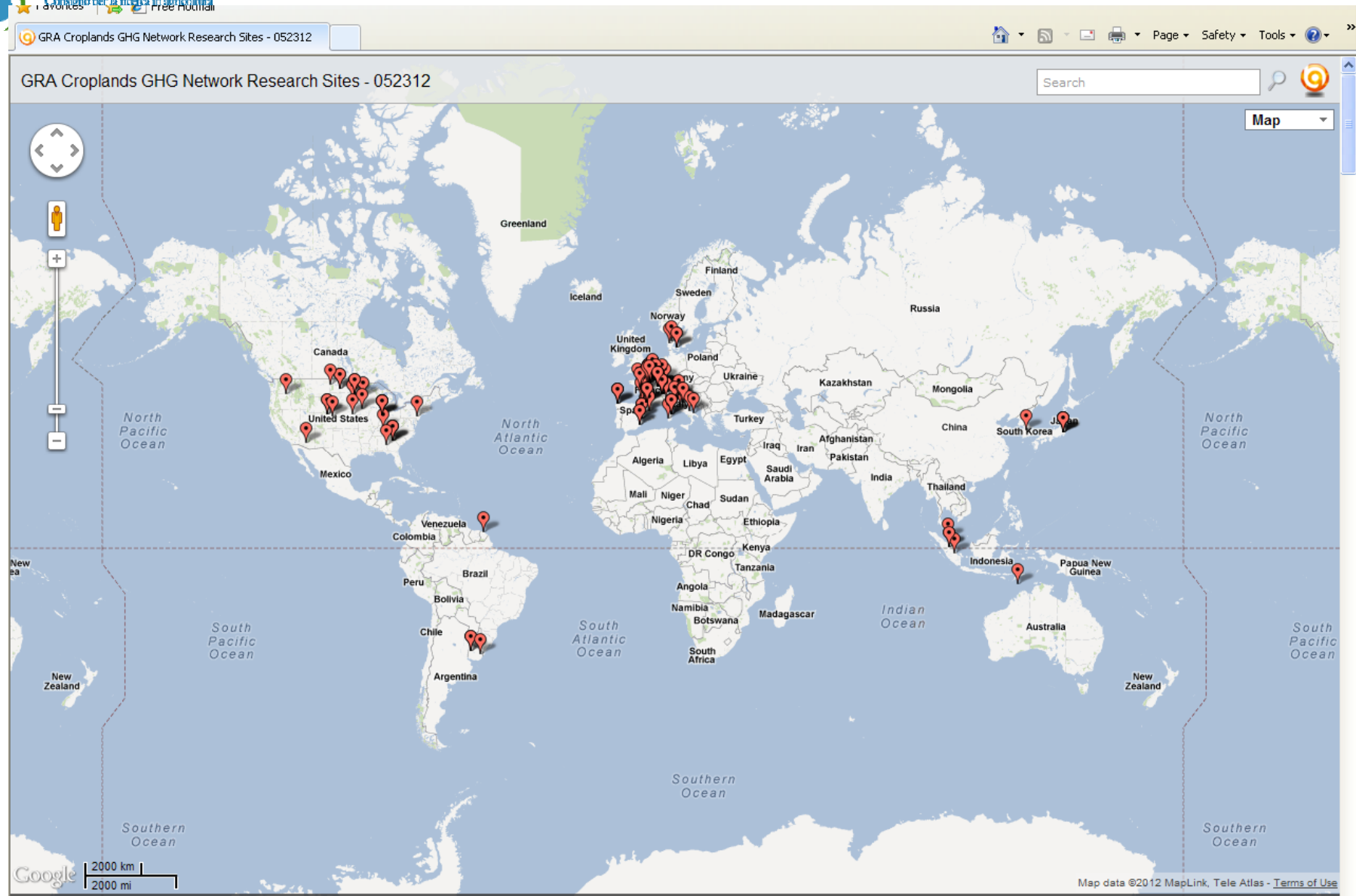


Long Term Experiments



Berchidda (Olbia-Tempio)	Quantification of soil C sink along a chronosequence of land uses and managements under Mediterranean conditions
	Ecological Function and Biodiversity Indicators in European Soils
	Ecosystem services of the large scale grazing systems: productivity, and carbon sequestration
Arborea (Oristano)	Organic and synthetic N fertilization of a corn-Italian ryegrass double cropping system
Agugliano (Ancona)	Long term experiment on tillage and N fertilization effects on soil fertility and crop productivity
Serra de' Conti (Ancona)	Watershed analysis: monitoring of cropping systems, runoff water (including sediments, nitrates and phosphorus) and soil organic carbon at catchment scale
Rutigliano (Bari)	Carbon balance of an energy crop (<i>Cynara cardunulus</i> var. <i>altilis</i>)
Foggia	Long term experiment about crop residue management
Pisa	CIMAS: Long-term experiment comparing Conventional vs. Integrated Management Systems in a six-year crop rotation.
Carmagnola (Torino)	Long-term experiment comparing maize-based cropping systems and fertilization managements, including manure
Legnaro (Padova)	Crop rotation, organic and mineral fertilisation LTE
Papiano (Perugia)	Crop residue management in non-irrigated cropping systems
	Organic vs conventional low-input cropping systems
	Organic fertilization x mineral fertilization
Cadriano (Bologna)	Crop rotation x mineral fertilization x organic fertilization
	Soil tillage x crop rotation

Long Term Experiments in Italy





of big relevance for policy makers willing to apply the 4/1000 initiative because they will have a “certified” territorial baseline to:

- start with
- reference

Pillar 1) Measuring/estimating soil C stock:

1. long term experiments in field

2. laboratory facilities

- soil microorganisms involved in the C cycle
- soil enzymatic activity

3. coupling in a GIS environment bio-physical models (RothC) with:

- soil
- crop
- weather datasets

This approach allows for estimation of stocks. It can be used to assess:

- Baseline
- Potential of selected management practices to sequester C

(CIS-Carbon in Italian Soils, MIPAAF)



Pillar 2) Developing agricultural systems management to sequester C and reduce emissions

Holistic studies on:

- agro-ecology
- organic farming sector
(SOILVEG, CORE-ORGANIC)
- crops diversity within farms
- longer rotations
- cover crops
- intercropping
(AGROCAMBIO, FATIMA)
- conservation agriculture
- reduced tillage
measures to reduce erosion
management practices to increase soil
C sequestration
- rangeland management
(EFFICOND and MONACO, funded by the MIPAAF)

the potential CREA-Italy research areas for synergies



Country Focal Points to the Global Soil Partnership

A	G	P
Afghanistan	Gabon	Pakistan
Albania	Gambia	Palau
Algeria	Georgia	Panama
Andorra	Germany	Papua New Guinea
Angola	Ghana	Paraguay
Antigua and Barbuda	Greece	Peru
Argentina	Grenada	Philippines
Armenia	Guatemala	Poland
Australia	Guinea	Portugal
Austria	Guinea-Bissau	Q
Azerbaijan	Guyana	Qatar
B	H	R
Bahamas	Haiti	Republic of Korea
Bosnia and Herzegovina	Israel	Samoa
Botswana	Italy	San Marino
Brazil		Saudi Arabia
Burmese		São Tomé e Príncipe
		Anna Benedetti (Centro di Ricerca per lo Studio delle relazioni fra pianta e suolo „CRA-RPS)

- To increase the information availability on production system at national level, to allow scenario analysis
- To further develop our modelling platform to enhance data access and simulation capabilities
- To improve monitoring via the project AgriDigit – Digital Agriculture of the Ministry of Agriculture
- To disseminate knowledge and improve application of Precision Agriculture, estimating its potential mitigation effect in production systems

