LIFE15 CCM/IT/000039 - Forage4Climate
How the management of forage systems can improve carbon sink and reduce GHG emissions
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Forage systems for less GHG emission and more soil carbon sink in continental and Mediterranean agricultural areas

Total amount: € 2,850,980

EC Co-funding: 59.80 %

1st September 2016 - 31st August 2020

forage4climate.crpa.it
Location

The project involves 3 Regions of the Po Valley (Piedmont, Lombardy and Emilia - Romagna), Sardinia and 4 Greek Regions (Peloponnese, Thessaly, Sterea Ellada and Epirus).
Beneficiaires

C.R.P.A S.p.A.

Agricultural University of Athens (AUA)

 Milan University

Sassari University

Turino University
Livestock and GHG emissions (FAO GLEAM 2.0)

MILLION TONNES CO₂-EQ

- 603 North America
- 580 Western Europe
- 1887 Latin America and the Caribbean
- 418 Sub-Saharan Africa
- 1507 South Asia
- 1606 East & Southeast Asia
- 158 Oceania

- 127 Eastern Europe
- 93 Russian Federation

Categories:
- Beef
- Cattle Milk
- Pork
- Chicken Meat & Eggs
- Small Ruminants Meat & Milk
- Buffalo Meat & Milk
Global emission intensities by commodity

(FAO GLEAM 2.0)
Global livestock feed intake (FAO GLEAM 2.0)

- Grass & leaves: 46%
- Crop residues: 19%
- Fodder crops: 8%
- Grains: 13%
- Other edible: 1%
- Oil seed cakes: 5%
- By-products: 5%
- Other non-edible: 3%

6.0 gigatonnes in 2010
Agriculture and GHG emissions (Ispra 2017)

Italy in 2015 emitted

- 433 Mt CO2-eq excluding LULUCF
- 397 Mt CO2-eq including LULUCF
Agriculture and GHG emissions (Ispra 2017)

A cow emits 500l of methane per day, which is equivalent to 10% of the energy she would otherwise use for performance and milk production.
Objectives
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- **To demonstrate** how agricultural systems connected to milk production can contribute to CCM.
  - Good Practices effective in reducing GHG emissions and increasing carbon stock in soil (croplands, grasslands, and pastures);
  - Tools for the evaluation of the C stock and GHG emissions in order to evaluate the effects of mitigation interventions.

- **To contribute** to spread the contents of Decision n. 529/2013/EU on accounting rules on GHG emissions and removals from activities related to land use, land use change and forestry (LULUCF).
Project context

Forage4Climate deals with forage systems in European areas with continental climate for cow’s milk and with Mediterranean climate for sheep and goat’s milk
A forage system is a crop system for the production of livestock feed and fodder: the positive effects of meadows and pastures on the carbon stock cannot be separated from the greenhouse gas (GHG) emissions related to the production and use of forages in farming systems.
A network

- 37 demonstrative farms in 14 forage systems
Carbon footprint of milk

Fresh milk
Milk = 8570 kg/y FPCM

Milk for Parmesan cheese
Milk = 8410 kg/y FPCM

1.27
(1.08-1.36)

1.31
(1.19-1.42)

- technical inputs (***)
- purchased feed (***)
- energy for agricultural machinery
- N fertilization N2O (**)
- manure management N2O (*)
- manure management CH4 (*)
- enteric emissions (*)

(*) IPCC 2006
(**) Stehfest e Bouwman 2006 model
(***) Ecoinvent database
Expected impact

- **Base line GHG emission**
  - cow 1.2 kg Co₂ eq/kg FPCM
  - sheep 3.2 kg Co₂ eq/kg FPCM

- **Base line organic carbon content**
  - F4C’s forage systems have from 47 to 60 tOC/ha

- **Mitigation result**
  - - 740,000 ton Co₂ eq/year referred to dairy sector of Italy and Greece
Thank you for your attention

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