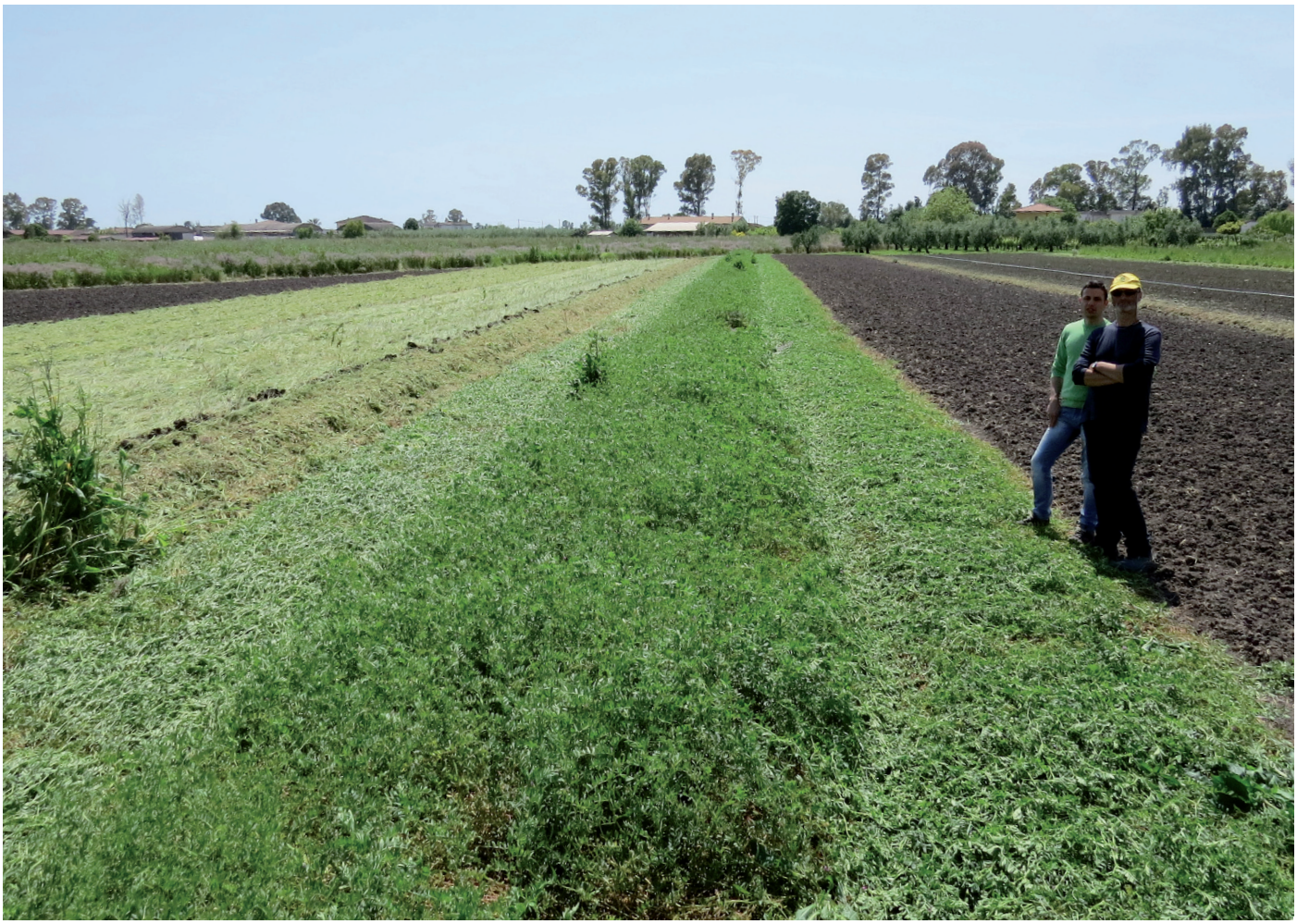
CORE organic Plus



Improving soil conservation and resource use in organic cropping systems for vegetable production through introduction and management of Agro-ecological Service Crops

SoilVeg

Aim of the project:

SoilVeg studies alternative management of agro-ecological service crops to sustain organic vegetable production and promote the quality of the environment.

Introduction

SoilVeg is an innovative European research project.
For 3 years, 9 European countries and 14 partner institutions will be working together with the aim to study the better management of Agro-ecological Service Crops.

Agro-ecological Service Crops (ASC) represent a powerful tool for organic farmers. They are able to positively influence the agro-ecosystem, promoting the whole soil-plant system equilibrium in space and time, having impact on soil fertility and on occurrence of weeds, diseases and pests.
If appropriately managed, ASC can contribute to reduce nutrient losses from the agroecosystem, to increase soil C sink potential and to improve system energy use efficiency.

In the next three years, 9 European countries and 14 partner Institutions (Italy, Slovenia, Denmark, Spain, Estonia, Belgium, France, Latvia) will be involved in the field experiments and in the research activities.

Background

Agro-ecological Service Crops (ASC) are introduced in the agro-ecosystems to provide or enhance ecological services, thus promoting the whole soil-plant system equilibrium. ASC introduction and proper management have impact on soil quality and fertility and soil nutrients losses. They also contribute to increase soil C sink potential, to mitigate GHG emissions and influence weeds, diseases and pests occurrence.

To avoid competition with the subsequent cash crops, the growth of the interposed ASC is terminated in advance of the cash crop planting. The traditional, most widespread, technique used to terminate the ASC is incorporation as green manure into the soil by tillage. Since tillage is an energy and labour consuming and soil disturbing operation, the use of no/reduced tillage techniques, as the rolling crimping technology that terminates by flattening the ASC, has received increasing interest.

The main challenge of the project will be to test the hypothesis that, compared with the incorporation of ASC into the soil as green manure, the use of the roller crimper reduces nutrient losses from the soil/plant system and GHG soil emission.

Main activities

- Stakeholder involvement and innovation transfer.
- Crop performance evaluation and energy efficiency assessment.
- Soil fertility and soil quality assessment.
- Weeds/ASC/cash crops interaction.
- Soil arthropod diversity and plant/pest/beneficial insect dynamics.
- Prediction of long-term soil C and N changes and GHG emissions.
- Short term agro ecosystem N dynamics, NO_3 – leaching assessment and root growth.

Expected societal benefits of the project

The project will have a relevant impact since organic vegetable growers will benefit from the project outcome as a system to mitigate the negative effects of pests and weeds, to reduce the nutrients losses from soils, crop nutrient use efficiency and consequently the dependence on farm import of animal manure and the fossil fuel energy consumption. Consequently, the vegetable farmers will be able to produce quality produce with lower use of external inputs, thus improving farm profitability.

- Rural communities will benefit from the project outcome in terms of improved environmental profile of organic vegetable farms and this will reduce negative environmental impacts on soil, water and atmosphere.
- Consumers will benefit from the project as they will have the chance to access to vegetable produces obtained in low environmental impact production systems.
- Policy makers could use the project outcomes in setting or improving standards for organic vegetable production for EU Regulations and for rural development plans and premium schemes.

Expected results and impacts

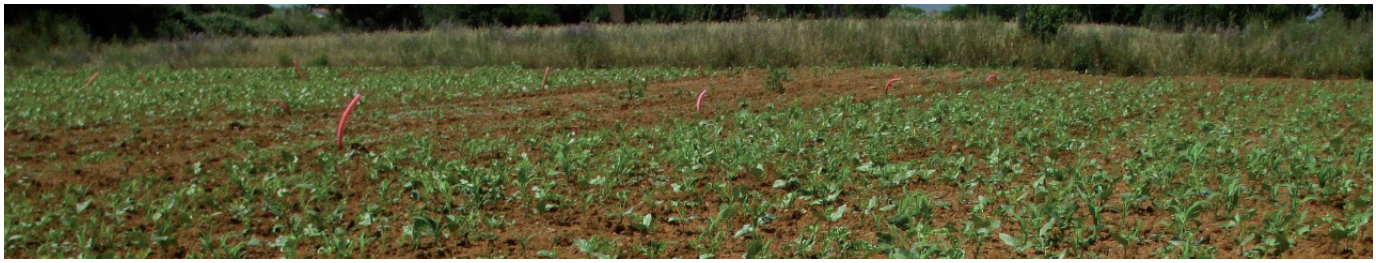
The main expected result is the optimisation and the spreading of novel ASC management strategies aimed to improve soil quality and to enhance resources use in organically managed systems for vegetable production.

During the next three years, SOILVEG research activities will aim at verifying the hypothesis that the use of the roller crimping technology for ASC termination is able to:

i) maintain yield of the cash crops and vegetable products quality,
ii) reduce soil disturbance and enhance soil quality, improving internal system use of nutritive elements,
iii) reduce fossil fuel energy consumption,
iv) create a suppressive environment for pests, diseases and weeds.

Expected long-term impacts

The smart designing of cropping system and the use of ASC have been included in the list of the most promising techniques to improve N use efficiency and reduce the risk of nitrate leaching. It is expected that the results obtained in this project in the area of the cropping system smart designing and Agro-ecological Service Crops exploitation will contribute to meet the increasing demand of innovation and to give to the European OFF sector a leading role in a global perspective.



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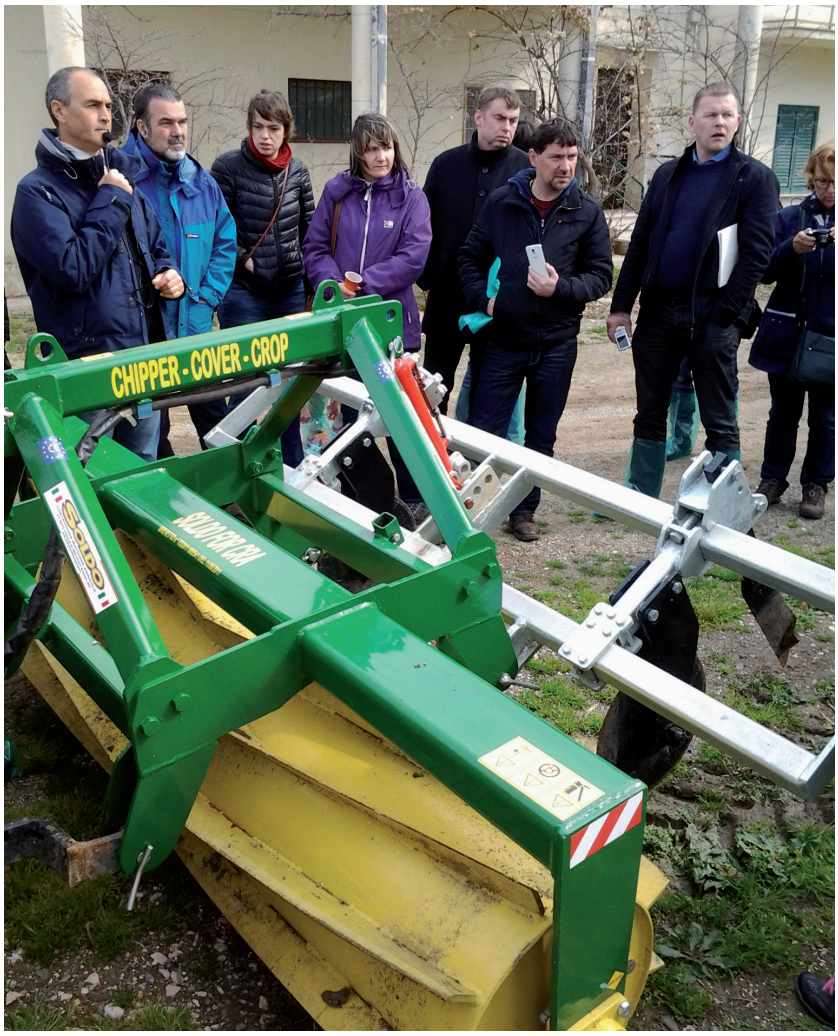
How to reach target groups

SOILVEG foresees dissemination and innovation transfer activities towards:

- producers and extension services (through field visits and a short video);
- policy makers, consumers and civil society (through specific press releases and communication materials)
- scientific community (through scientific publications, presentations at conferences/workshops.



Further information

This project is funded via the ERA-net CORE Organic Plus, which is a network of 20 countries on initiating transnational research projects in the area of organic food and farming systems. In 2014, CORE Organic Plus selected 2-ORG-COWS and 10 other projects.
Read more at the CORE Organic website: http://www.coreorganic.org/
and find publications from the project at
http://coreorganicplus.org/research-projects/soilveg/
and at: http://orgprints.org/view/projects/soilveg.html