



Il progetto LIFE AGRESTIC ha ricevuto finanziamenti dal Programma LIFE dell'Unione Europea



**AGRESTIC**

**Short technical note**

# Introducing catch crops in the crop rotation

Catch crops are cultivated between two cash crops or as relay cropping. They are aimed to provide soil cover and abundant organic matter with residues suitable to sustain microbial development, and to establish deep root system to facilitate nutrient uptake. Catch crops deliver environmental benefits, such as improving soil structure and drainage, limit water loss and migration of nutrients into deeper soil layers, protect soil against wind and water erosion, enhance soil biological activity, reduce weed competition, increase pollination, produce forage.

## Problem

There is the potential to decrease carbon emissions from agricultural soils, and to improve soil carbon sequestration, for example by improving agricultural management. Catch crops can represent an important way to enhance carbon sequestration in the soil.

## Solution

Catch crops are cultivated to improve the organic matter content of soil, as their biomass is incorporated in the soil at the end of the cropping cycle. Moreover, catch crops prevent nutrient leaching, enhancing the amount of nutrients available for the following crop.

## Impact

The introduction of catch crops in the rotations in the LIFE AGRESTIC demonstration fields, lead to an increase of carbon sequestration and nitrogen fixation during the three years of trials. Catch crops produced on average 3 t/ha per year of dry matter biomass, with a positive effect on the soil humified organic matter, and contributed to increase the PAN (Plant Available Nitrogen) for the following crop. The amount of biomass produced is anyway dependent on the selected species and the weather during the cropping phase.

## Practical recommendation

Catch crops to be set up in the field need to be carefully chosen according to the characteristics of the field. In particular, the climate and soil conditions, as well as the preceding crop, will drive the choice of the moment for catch crop establishment and the choice of the species (or mixture of species). The following crop will mainly drive the moments for catch crop termination, taking into consideration all the operations necessary for the preparation of the sowing bed. The characteristic of the catch crop used, such as the ability to re-grow, will define the operations needed for the catch crop termination.

The choice of the catch crop to be established is also driven by the goals the farmer wants to achieve, as different species can be more effective due to their characteristics. Some species can have particular effects, i.e. species with biofumigation properties, that can be more suited in case the field has fitosanitary problems due to nematodes or soilborne diseases.

The management of catch crops represents a cost for the farmer (seed and sowing operations, crop termination). Anyway, the benefits arising from the introduction of catch crops are more diversified, and some of them can also lead to cost saving in the following crop, or can generate PES (Payment for Ecosystem Services) mechanisms. The main benefits arising from the introduction of catch crops are: reduced GHG emissions and increased carbon sequestration thanks to the increase of soil biomass; nitrogen supply for the following crop and reduction of nitrogen leaching (leading to a less amount of chemical fertiliser to be provided); improve water drainage; keep the soil structure and decrease soil losses due to erosion; maintain the soil humidity; reduce weed competition; increase biodiversity and pollination; improve the landscape; produce forage.

## Applicability box

### Theme

Carbon sequestration  
Prevention of nutrient leaching  
Soil protection from erosion

### Keywords

Catch crop

### Geographical coverage

Europe

### Application time

- 1) Between two cash crops, end of summer up to end of winter
- 2) Relay cropping, spring up to autumn/winter

### Required time

Time for crop development

### Period of impact

During catch crop cultivation and beyond

### Equipment

Machinery for crop sowing and termination

Coordinatore:



Partner:



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# AGRESTIC

## Short technical note



a) alfalfa in the Pisa site. In this case the catch crop was intersown in the previous wheat crop at tillering stage (march), in order to have prompt soil coverage after wheat haversting , keeping the soil covered during summer;

b) mixed cover crop (*Raphanus*, *Facelia* and *Trifolium*) in the Foggia site. The mixture was seeded at the end of summer, to take advantage of the soil moisture available during the autumn and winter period.

- Picture 1: Catch crops in the LIFE AGRESTIC demonstration sites:
- a) alfalfa in the Pisa site. In this case the catch crop was intersown in the previous wheat crop at tillering stage (march), in order to have prompt soil coverage after wheat haversting , keeping the soil covered during summer;
  - b) mixed cover crop (*Raphanus*, *Facelia* and *Trifolium*) in the Foggia site. The mixture was seeded at the end of summer, to take advantage of the soil moisture available during the autumn and winter period.

### Further information

- LIFE AGRESTIC web page [www.agrestic.eu](http://www.agrestic.eu)

### About this short technical note and LIFE AGRESTIC

**Authors:** Horta

**LIFE AGRESTIC:** The LIFE AGRESTIC project aims at fostering the adoption by EU farmers of innovative and efficient cropping systems with a high climate-change mitigation potential, and spreading innovative views and tools for climate ready and resource efficient agriculture.

Project website: [www.agrestic.eu](http://www.agrestic.eu)

**Project partners:** Horta srl; ART-ER S.Cons.p.a; ISEA srl; New Business Media Srl; Scuola Superiore di Studi Universitari e di Perfezionamento Sant'Anna; Universita' Cattolica del Sacro Cuore; Università degli Studi di Milano

Coordinatore:



Partner:



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