

## Policy Brief No8 Conservation Agriculture to enhance soil carbon stock and reduce GHG emissions in European Agriculture

### What is the challenge?

The land sector is currently a significant net emitter of GHG, while agriculture accounts for approximately 11% of GHG emissions in EU (EEA, 2021) and also considering that the current situation of organic carbon stocks in European agricultural soils is low or very low (EEA, 2012), mitigation action is clearly necessary to meet even the targets in terms of reducing the effects of Climate Change. However, due to its unique characteristics, the soil has the potential to absorb large amounts of carbon and is key for reaching a climate-neutral agricultural sector and economy.

‘Carbon farming’ is a whole farm approach that aims to optimise carbon capture, through a range of practices, from the atmosphere to plant material and soil. Carbon farming focuses on the management of carbon pools, flows and GHG fluxes at the farm level, with the purpose of mitigating climate change. The adoption of the principles of Conservation Agriculture (Minimum Mechanical Soil Disturbance; Permanent soil organic cover; Species diversification) increases ‘carbon sequestration and storage in soils, as well as decreases GHG emissions from soil and machinery operations and should be considered to include them in the European policies to address the challenges that agriculture is facing due to Climate Change.

### Policy Recommendations

#### **EU Level:**

- Promote carbon farming practices based on the principles of Conservation Agriculture through the CAP and other EU policies.
- Promote crop management under the principles of Conservation Agriculture that allow carbon fixation in the soil: No tillage and/or strip-till in arable crops and groundcover in woody crops.
- Create a harmonized European Label that certifies the farm contributes to mitigating Climate change by soil carbon sequestration and minimising emissions.
- Facilitate access to the information necessary for farmers to make the transition from conventional agriculture to conservation agriculture under expert supervision.
- Promote R&D policies to adapt the technique to all crops, especially horticultural crops.
- Promote direct payments to farmers who store carbon and reduce their carbon footprint by reducing direct and indirect fossil energy consumption. Integrate no-tillage, strip-tillage, groundcover in woody crops and cover/catch crops as suitable practices to achieve the objectives of the European Green Deal and the Farm to Fork strategy.
- Create a science-based protocol of sustainable crop management practices for inclusion in carbon farming, prioritising:
  - Incentivise by subsidies and aids the adoption of no-tillage as a low CO<sub>2</sub> emission practice, both in terms of fossil fuel use and soil emissions.
  - Encourage and promote the use of cover crops for carbon sequestration and weed control to avoid tillage and thus reduce CO<sub>2</sub> emissions from organic carbon mineralisation.
- Promote efficient communication to the EU citizens for giving knowledge and raising awareness on which are the truly sustainable tactics that favour the reduction of fossil fuel use, and carbon sequestration and, therefore, contribute to the mitigation of climate change.
 

Analyse data from carbon farming pilots and assess whether a functional EU carbon farming tool that accurately measures the impact of carbon sequestration can be developed.

#### **Member States Level:**

- Facilitate farmers and agricultural service providers, through subsidy programmes, to acquire direct seeders, which is needed to establish No-till in the farmland.
- Encourage cooperation between farmers, promoting smallholder associations, and providing them with

mechanisms facilitating access to machinery and economic support.

- Ensure access to the information necessary for farmers to make the transition from conventional agriculture to conservation agriculture under expert supervision.
- Promote and fund research projects that will enable access to these techniques to all farmers in all European regions, regardless of climatic conditions and crops.
- Create of training and advisory service for farmers that accompany them to implement these techniques on the farm.
- Promote training activities for farmers and advisors at national and regional levels, demonstrating in situ the benefits of adopting the principles of Conservation Agriculture in terms of carbon sequestration, soil health improvement, reduction of fossil energy consumption and reduction of production costs.
- Encourage and promote the use of cover crops for carbon sequestration and weed control to avoid tillage and thus reduce CO<sub>2</sub> emissions from organic carbon mineralisation.
- Develop a range of financial incentives that support the adoption and transition for farmers to agricultural techniques that conduct carbon farming including conservation agriculture, regenerative agriculture, and agroforestry. It is important that farmers are supported in the first years of their transition as there can be a yield dip in the first years of adoption.
- Measures to increase carbon absorption in the agricultural sector have recently been introduced into the Italian legal system (article 45, paragraph 2-querter-2-octies, Legislative Decree n. 13/2023). In order to enhance sustainable agricultural and forestry management practices, capable of improving the capacity to absorb atmospheric carbon, and additional to those prescribed by EU and national legislation on the management of agricultural and forestry surfaces, it is established at the CREATE the public register of carbon credits generated on a voluntary basis by the national agroforestry sector; the credits in question can be used in the context of a national voluntary market, in line with the provisions relating to the National Register of agro-forestry carbon sinks pursuant to Ministerial Decree Environment April 1, 2008 .

## Expected Impacts

- Climate change mitigation through carbon sequestration and increase of carbon stock in the soil. Development of carbon sequestering farms, capable of storing more carbon than they emit, directly or indirectly.
- Reduction of direct emission from the soil.
- Improvement of soil health by increasing organic matter content, increasing biodiversity, and making farms more resilient to climate change, especially in the Mediterranean countries.
- Improvement of surface and groundwater quality, due to the reduction of runoff, erosion and leaching due to enhanced physical/chemical soil properties.
- Increased farm profitability, as costs are significantly reduced while maintaining the same incomes per production, favouring the fixation of the rural population.
- Change in the perception of European citizens about the role of agriculture in terms of the use of energies, sustainable production systems and climate change mitigation.
- Improved farm incomes through carbon farming, diversifying farm income streams through payments for sequestering carbon in their soils can improve farms' financial sustainability.



  
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