

Comments by the European Conservation Agriculture Federation(ECAF)

on the

Report on the project 'Sustainable Agriculture and Soil Conservation (SoCo)'

Addressing Soil Degradation in EU Agriculture: Relevant Processes, Practices and Policies

Section:

Nature, localisation and magnitude of soil degradation related to agriculture

The major driver for water erosion are intense rainfall, topography, low soil organic matter content, percentage and type of vegetation cover and land marginalization and abandonment.

Surely one of the main and widely recognized drivers of water erosion is soil disturbance and destabilization through tillage such as ploughing followed by PTO-driven implements and other practices such as over-stocking, creating a loose and uncovered soil surface. Yet this factor is not mentioned.

While marginalization or abandonment may increase water erosion risk it is only under very specific conditions(i.e. terraces); in general it is not the case because when soil is set-aside or left fallow it becomes consolidated and covered through the establishment and regeneration of natural vegetation.

The climate factor explains the existence of a north-south climatic gradient, with high soil organic carbon levels in the colder humid northern part of Europe and in mountainous areas, and lower levels in the warmer semi-arid southern part. The model results show that agricultural soils in Europe have very different actual soil organic carbon levels and are subject to different risk levels of soil organic carbon decline.

General statements such as this mask the fact that agriculture practices can have a dramatic influence on SOC levels irrespective of climate and location. It should be noted that land use in general does not induce decline in SOC but the actual agricultural practices adopted on that land, namely intensity of soil tillage and poor residue management. For this reason in warmer climates soil tillage contributes even more to the mineralization of SOC than in colder regions.

Maintaining and optimizing organic carbon levels (as a specific objective of land management) is important in contributing to climate change mitigation.

This is correct but there are no suggestions made on how to maintain or increase SOC levels.

The natural susceptibility of soils to compaction mainly depends on soil texture, with sandy soils being least and clayey soils being most susceptible.

This depends very much on the type of clay minerals, but in general sandy soils are more susceptible to “natural” compaction than clayey soils while silty soils with lower SOM levels are more susceptible to “man made” compaction.

Section:

Relevant farming practices for soil protection, conservation and improvement, their uptake and related environmental objectives

Similarly, consumption of fuel can realistically drop by 10-20 % and 15-25 % for reduced tillage and no-tillage respectively.

These figures are very conservative, especially for no-tillage, and would not reflect international research data or practical on-farm experience with relation to fuel consumption reductions possible under conservation agriculture systems. For example official measurements conducted in CH-Fregiécourt in 2007, resulted in a fuel consumption of 49 l/ha for plough tillage vs. 10.5 l/ha for no-tillage.

Organic farming, although different from conservation agriculture, has similar positive effects on soil organic carbon content and soil biodiversity.

This is true only where the organic system utilizes the same principles as CA – those being minimal soil disturbance, permanent soil cover and the use of rotations and cover crops.

Sub-soiling involves loosening deep hardpans in soils, thereby improving the soil's infiltration rate and root penetration. In particular, it has a beneficial effect on infiltration rate and capacity, but shows variable effects on nutrient cycling.

Sub-soiling is more often used by farmers to break ‘man-made’ compacted layers created through intensive tillage practices in poor soil conditions. Improved infiltration rates that accrue are temporary in nature as the cause of the compaction/infiltration problem has not been addressed, namely poor soil structure and machinery induced compaction. Long-lasting and positive subsoiling effects will only occur if the loosened soil is being stabilized straight away by plant roots followed by managed reduction of traffic and machine use.

Buffer strips at the edge of arable lands can significantly reduce (by 70-90 %) the volume of suspended solids, nitrates and phosphates transported by agricultural run-off to water bodies.

Buffer strips (and silt traps) do not prevent the movement of suspended solids, nitrates and phosphates from the surrounding land catchment area but only provide a barrier to these particles entering watercourses. Surely the better solution is to restrict and cease agricultural run-off by the adoption of continuous soil cover as advocated under conservation agriculture.

Section:

Review of the regulatory environment and policy instruments that address conservation agriculture and soil conservation practices

ECAF welcomes that the authors have recorded the various mechanisms, directives and legislative instruments under which the arrest of soil degradation is being catered for. However considering the fact that only approximately 1% of the total EU agricultural arable area is devoted to CA practice, and that independent research has shown a direct positive correlation between CA and enhanced soil quality and protection, would it not suggest to the authors that current mechanisms and initiatives at member state level need to be strengthened if the goals, targets and objectives set out in the proposed Soils Directive are to be achieved?

ECAF further recommends that it is in the combined interest of the EU Commission, EU Parliament and every Member State to initiate new, and improve existing, education and research initiatives targeted at accelerating the uptake of conservation agriculture at farm level throughout Europe using *pull factors* such as:

- Effective knowledge and technology transfer using scientific and practical expertise from a range of climatic regions across Europe
- Extension of 'incentive-led programmes' for conservation agriculture under existing agro-environmental measures
- Establishment of long-term research projects with continuous conservation agriculture systems at both farm and research level with special focus on crop rotation, cover crops and plant protection measures
- Strengthening of farm extension services with specialized conservation agriculture advisers skilled in 'farmer to farmer' knowledge transfer resulting in a multiplier effect in the sector
- Mobilisation and encouragement of proactive involvement of stakeholders including administrative authorities, political agencies, farmer organizations, food and agricultural engineering industries and consumer organizations
- Establishment of a market for carbon credit trading based on soil carbon sequestration

(ECAF 08/04/2009)