



International Federation of Organic Agriculture Movements  
EU Regional Group

## POSITION PAPER



**The EU Soil Directive –**  
building the foundations for a  
quagmire or healthy humus?

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The IFOAM EU Group underlines that this position paper only addresses food and farming-related aspects of soil protection as the IFOAM EU Group's field of expertise and policy work focuses on this area.

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The **IFOAM EU Group** is the European working level within the International Federation of Organic Agriculture Movements. It brings together more than 300 organisations, associations and enterprises from all EU-27, EFTA and candidate countries. IFOAM's goal is the worldwide adoption of ecologically, socially and economically sound systems that are based on the principles of Organic Agriculture.



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### **Summary**

*Soil is a valuable, yet non-renewable, resource of worldwide importance. Anthropogenic activities from sealing to intensive agriculture and climate change are having long-lasting damaging and detrimental effects on this life-supporting structure. The European Commission made an initial step to a coordinated approach to protect this resource in 2006 by drawing up a proposal for an EU directive for the protection of soil which was never implemented due to a blocking minority of Member States in the European Council. The IFOAM EU Group lauds the first attempt by the Commission to harmonise legislation in the EU, but believes the Directive should be even stronger, setting a clearer framework of targets, taking a holistic approach, doing more than the minimum, being forward-looking and innovative in nature, and making use of financial resources for the purposes of achieving the Directive's aims. Organic farming should be mentioned as a practice of particular importance, as it is identified as having soil-protecting and enhancing effects, and should therefore receive special recommendation by the Directive as a soil-protective measure.*

### **Introduction: the value of soil**

Soil is an integral and indispensable component of our existence. The services it renders range from providing a solid foundation for our activities to the basis of agriculture, up to storing carbon to mitigate climate change. This foundation is becoming increasingly shaky with the innumerable anthropogenically-induced threats it faces, such as sealing, compaction, erosion, salinisation, loss of topsoil, invasive species, fragmentation, etc., and though soil is generally immobile, it does play a very important role in transnational affairs, such as climate change and biodiversity, and can in some cases even be displaced over some distance (e.g. through solution in water or carrying by wind).

Our knowledge of soil processes and soil biodiversity is worryingly limited, and though humus-rich topsoil, a precondition for healthy and sustainable agriculture, is in theory renewable, the time scale of renovation basically renders it non-renewable. Already today, some 16% of EU soil is affected by degradation (Grimm, Jones, Montanarella, 2002), 45% of soils show a low organic matter content, and 9% of Europe's land is sealed (DNR, 2010).

**Some figures:**

- *Agriculture has a significant climate change mitigation potential. By far the greatest mitigation contribution originates from **soil carbon sequestration** (5.34 Pg CO<sub>2</sub>-eq yr<sup>-1</sup>), but also methane (0.54 Pg CO<sub>2</sub>-eq yr<sup>-1</sup>) and nitrous oxide (0.12 Pg CO<sub>2</sub>-eq yr<sup>-1</sup>) emissions can be considerably reduced (Bellarby et al., 2008).*
- *One hectare of high-quality soil contains an average of 1,300 kg of earthworms, 1,000 kg of arthropods, 3,000 kg of bacteria, 4,000 kg of fungi, and many other plants and animals (Pimentel et al., 1992). For the 4.5 billion hectares of world agricultural land, soil biota contribute approximately \$25 billion per year in topsoil value (Pimentel et al., 1997).*
- *Turbé et al. (2010) reported that the value of potato crops destroyed by the Colorado beetle in the UK as a result of the breakdown of the vital **pest control function of soil** stood at € 322 million.*

## The EU policy framework for soil protection

Following the taking up of the protection of soil as a Thematic Strategy in the 6<sup>th</sup> Environmental Action Programme in 2002 (European Union, 2002), an extensive consultation process from 2003 to 2005, a communication (COM(2006) 231; European Commission, 2006b) and concrete proposal for a Soil Directive by the European Commission in 2006 (COM(2006) 232; European Commission, 2006a), and support by the European Parliament in its first reading in 2007 (European Parliament, 2007), a blocking minority of a handful of Member States in the European Council is now hampering adoption.

The Commission proposal from 22<sup>nd</sup> September 2006 for a directive "establishing a framework for the protection of soil" makes a positive first step towards closing the divide left by the various other legislation indirectly benefiting soil (on water, waste, chemicals, industrial pollution prevention, nature protection and pesticides) (European Commission, 2006a). The IFOAM EU Group welcomes this first harmonisation attempt of EU soil legislation: It would oblige Member States to draw up preventive measures, inventorise the greatest threats to their soils and identify high-risk areas, and come forward with soil protection measures and remedy strategies that take into account the social and economic dimension of measures. With this proposal, the Commission aims to halt the increasing infringement on soil, restore degraded areas, increase public awareness for soil and achieve greater synergy between the various policy areas. We also applaud the desire to establish national inventories of contaminated sites, soil status reports for prospective buyers

of land, and the flexible nature of the directive, having respect for the great variability of nature, soil and land use across Member States. Such flexibility is needed when considering the differences in soils across the EU: while organic matter content is often very low in Mediterranean soils, there are also high-quality and very productive soils in other parts, which require a very different approach to soil protection.

### **IFOAM EU demand: soil protection to be founded on serious principles**

More ambitious targets and approaches are needed to graze the way for healthy soils. In our opinion the proposed directive as it stands doesn't even nearly go as far as it ought to. We fear the Commission has interpreted the argument for flexibility too narrowly, thereby ironically leaving a too broad scope for inaction open. The premises, from which such a directive should originate, must be rooted in

- **A holistic approach:** The full range of soil-relevant areas must be analysed and dealt with. The significance of soil ranges from solid basis to habitat, provision of ecosystem services, storage and retention medium, production of various forms of nourishment up to recycling of organic waste material into nutrients for living organisms. The Commission does intend to ensure integration of the Directive with other existing legislation and international conventions, and does recognise the importance of soil in relation to climate change, but the Directive as yet does not require Member States to cover the entire range of services for which we are indebted to soil.
- **Doing more than the minimum:** The deep-seated desire to not just protect, but enhance soil must emanate from the Soil Directive. The current proposal does not demand Member States to be proactive or ambitious beyond the prevention and restoration of worst damages to soil, a serious drawback.
- **A forward-looking and innovative approach:** Responding to today's challenges must play a core part in the Directive, with solutions for dealing with society's pressing needs (most notably climate change) which soil touches upon. While information and best-practices dissemination is foreseen, analysing soil maps to identify and earmark valuable soils that shall be protected for agricultural use, encouraging research in soil biodiversity and soil mechanisms, a field still substantially lacking understanding, as well as in agro-ecological innovation, is sorely needed to improve soil management and must be stimulated by the Directive.

- **Replacing lip service by putting one's money where one's mouth is:** Legally-binding commitments need to be drawn up and measures put in place to enforce compliance. The Directive includes a paragraph on timeline, obliging Member States to identify risk areas and contaminated sites within five years of entering into force of the Directive, along with targets and measures to be specified within seven years, but this is still too lax in our opinion. The minimum requirements must be raised several notches higher, and financial resources be put in place to coax Member States to outperform the legal minimum (the current proposal draws on the financial resources of Member States). Likewise, sanctions, penalties, exclusion from benefits, and other innovative forms discouraging non-compliance need to be instituted by the Commission.

For the IFOAM EU Group, as an organisation representing the organic sector in Europe, healthy soil is an indispensable and fundamental (in every sense of the word) everyday matter, situated at the beginning of the various chains of food and other farm production. Farmland soils must be kept in good state or restored in order for them to be able to fulfil their function of producing healthy food and safeguarding future food security.

### **IFOAM EU demand: soil protection needs clear targets**

There is compelling evidence for the urgency to not just act, but act **target-driven** by means of **strict and ambitious legislation**. Under the current Soil Framework Directive proposal, Member States would still be completely free to determine the level of ambition they wish to achieve, and by what means they wish to achieve it. There is **no mentioning of EU ambition levels or broad EU targets** to

- ➔ **minimise erosion:** In new Member States, levels of erosion (the disappearance of topsoil and humus) can reach up to 35%, up to 12% of EU's soils are threatened by water erosion, and 2% by wind erosion (DNR, 2010). Erosion is spreading and a growing problem in farming and thus a threat to future food security, not just in Europe. Cover cropping, crop rotation, integration of crop and livestock farming are known methods to counter this effect.
- ➔ **stop salinisation:** Excessive amounts of sodium, magnesium and calcium have a toxic effect on soil, killing most, if not all, useful organisms. Responsible irrigation methods and a sustainable exploitation of groundwater would prevent such effects from occurring.
- ➔ **limit surface sealing and protect valuable farmland:** The Directive makes reference to the need for limiting sealing, but does not attach any



relative or absolute quantification target to this. In Germany, for example, 100 ha of land are transformed to settlement or streets daily (DNR, 2010), and similar trends can be observed across Europe. Especially where productive high-quality soils are concerned, which ought to receive special protection status, this is a most alarming development. Sealing affects the natural trickling effect, disrupts water flow and can lead to flooding. Losing valuable humus and topsoil through erosion (see above) can have a similar effect, as the top layer becomes hard and impermeable, leading to water-logging and increased terrestrial albedo.

- **set maximum levels for soil contaminants:** Depending on how land is used, excessive amounts of nutrients can leach into the ground and groundwater. While monitoring of contaminated sites is prescribed, every country is free to decide what levels of contaminants it deems significant to harm human health and the environment, and the time frame to just carry out a risk assessment of the site virtually ineffective from an environmental point of view (a risk assessment shall be carried out on 10% of sites reported to contain critical levels of soil contaminants within 5 years, 60% within 15 years, and the remaining within 25 years). This is further aggravated by lax remediation strategies with no fixed timetable. In the case of land used for agriculture, spreading manure responsibly and avoiding the use of mineral fertiliser and pesticides goes a long way in abating contamination.
- **assist by means of experts:** Knowledge exchange and communication of best practices is mentioned as task of the Commission, but how this will be carried out not further specified. Providing advisors and experts in recommending how to protect soil could prove extremely useful for the thousands of landowners having no basic grounding in soil management, and may even be much welcomed and necessary for some farmers.
- **maintain or enhance soil biodiversity:** Soil biodiversity is a much more complex and obscure area than biodiversity in general (which, arguably, is also still very poorly understood), necessitating extra research and extra targets in addition to those set for biodiversity in general. With the Nagoya deals, such action becomes even more pertinent.
- **limit compaction:** Soil needs to breathe, and compaction is a real and serious threat in urban areas and resource-intensive industrial agriculture alike; soil-harmful practices disturb burrowing animals, meandering watercourses, and available nutrients and must be restricted.
- **prescribing a flexible organic matter content:** Starving the ground of organic matter is akin to robbing it of its nutrients, releasing carbon and

killing invertebrates decomposing such matter. Careful management of crop sequences, and providing an enabling environment for soil biota are crucial elements to keeping this vital natural cycle intact, as well as mitigating and adapting to climate change.

→ **imposing restrictions on damaging forms of land use:** Factories, military shooting ranges, nuclear power plants – the list of industrial human activities with profound effects on soil are countless, and yet minimising such acts to a minimum is not being undertaken. Next to being potential sources of significant pollution, they also present potential losses of fertile land for many decades.

The list could carry on, but we believe this overview to provide enough reasons and impetus to define more specific guidelines for different soil types for the various parameters. The need to act is great, for inaction will lead to further soil degradation, which is estimated to cost the EU €38 billion annually (European Commission, 2007).

### ***Cross-cutting issues and synergies between legislations***

The Commission recognises the inter-linkages between different policies with the proposed soil directive. We believe that it should be made clear that best use must be made of possible synergies with other policies, for example with the Common Agricultural Policy (CAP), which should provide funding to target best soil practices in agriculture. Cross-cutting issues should also be considered in the different policy areas, e.g. EU biodiversity strategy, water policies, climate policies, etc. Especially the effects of climate change on soil must not be underestimated, and a policy promoting healthy soils could aid in making them resilient to the various and formidable threats posed by climate change.

### **Organic farming as an asset for soils**

A healthy soil is the basis of agriculture, and health one of the core principles of organic farming in particular. Organic agriculture is based on a holistic philosophy of maintaining integrity in natural systems and cycles. It is a knowledge-intensive and innovative approach to tackle today's challenges of food security, loss of biodiversity, and climate change, and soil plays a crucial role in all three of these areas. Organic farming is particularly suited to maintaining healthy soil, delivering high-quality food, fostering biodiversity, reducing greenhouse gas emissions, and guaranteeing high standards of animal welfare. Depending on altitude, organic farms were found to host 30% more species (Niggli, 2010), and organic soil benefits primarily from an



increased abundance of earthworms (Pfiffner & Mäder, 1997; Pfiffner & Luka, 2003; Hole et al., 2005), soil-dwelling arthropods (Pfiffner & Niggli, 1996; Pfiffner & Luka, 2003), and soil bacteria, fungi and mycorrhiza (Mäder et al., 2000; Mäder et al., 2002; Oehl et al., 2004; Hartmann et al., 2006; Esperschütz et al., 2007; Fließbach et al., 2007) (soils without earthworms drain water about 4-10 times slower (REAP, 1992)). Comparing different long-term field studies from Switzerland, Germany and USA, ideal organic farming systems were shown to be capable of storing on average 590 kg per ha and year extra carbon compared to conventional systems (Niggli et al., 2009). Also, humus accumulation is an extremely effective adaptation strategy for climate change, as soils rich in organic matter absorb more water during extreme rainfall, reduce surface run-off and erosion and are valuable sources of water during dry periods (Zeiger & Fohrer, 2009). In addition, organic is a growing sector, producing jobs in rural and urban areas and thereby contributing positively to the economy. As such, organic agriculture embodies the EU 2020 strategy of smart (innovative), sustainable (healthy ecosystems), and inclusive (job creation) growth.

In all of the above-mentioned areas, organic farming scores high. This is no coincidence, for organic farming does not haphazardly produce such results; rather, it is the result of a package of practices that sustain eco-functions in soils and deliver environmental benefits. Through its all-inclusive system approach, it covers a broad range of areas, just as soil is involved in so many aspects related to farming. Crop sequencing, cover cropping, applying organic matter, absence of mineral fertilisers and pesticides, minimum tillage, animal welfare standards – these practices, which were shown to be beneficial above for a number of reasons from preventing erosion and enhancing biodiversity to reducing soil contamination and increasing humus content, are applied by many organic farmers. Organic agriculture is thus beneficial for biodiversity, carbon sequestration, maintaining topsoil and functioning nutrient cycles.

### ***Organic Agriculture as specific recommendation within the Directive***

Through these tangible advantages we believe that organic farming deserves to be recommended as specific soil-protecting measure for agriculture in the EU Soil Directive. In line with the increasing recognition organic agriculture is gaining in society for its positive social and environmental benefits, and the EU-instituted regulation on organic food and farming, the IFOAM EU Group calls on the European Commission to make a specific reference to and firmly embed organic agriculture as a soil protection and enhancement measure for agricultural land in the EU Soil Directive.

### Conclusion

Soil is widely recognised to be a non-renewable resource, and one facing serious anthropogenic threats. While it is strictly speaking immobile and could therefore be considered as a matter of national concern, its importance in global environmental services cannot be underestimated, especially with regard to climate change, food security, ecological cycles and biodiversity.

Various attempts have been made to quantify the importance of soil to make this resource more tangible for businesses, policy-makers and the public. TEEB (2010), *The Economics of Ecosystems and Biodiversity*, was also established to do just that: highlight and quantify the invisible benefits nature delivers to us for free.

Considering the global environmental challenges soil plays an important role with the ecosystem functions it performs. To protect soils is a necessity, and an ambitious EU Soil Directive would be a milestone for the EU to reach this aim. The EU must live up to be a positive pioneer with strong standards in this concern, taking into consideration the important role soil plays for food security, climate change mitigation and adaptation as well as the conservation of biodiversity. Member States must now speed up to recognise this fact also in EU legislation.

As such, the Soil Directive has to be assertive, innovative and proactive, for if it is to make a real difference to the condition of our soils, it will come through ambitious, all-encompassing targets based on research in soil systems and continual improvements through innovation, education, standard setting for appropriate land use and the prohibition of soil damaging practices. The EU should work together to build a solid ground of healthy humus for Europe and the world, and not get bogged down in pure economic thinking and political quagmire.

Organic farming is a proven holistic approach to aid in these processes by building healthy soils, among others. Therefore, it should be considered as a leading measure of soil protection in the relevant policies.

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