Soil Association Cymru

Written Evidence Submission to the Economy, Trade and Rural Affairs Committee inquiry: "Soil Health in Agriculture"

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About the Soil Association

The Soil Association is a membership charity founded in 1946 by farmers, scientists, doctors, and nutritionists with a vision for good food produced with care for the natural world. Today, it develops and scales solutions for sustainable food and farming. Its Food for Life programme supports schools, hospitals, and caterers in shifting to healthy, sustainable diets. About 30% of primary schools in England are accredited. In Scotland, funded by the government, the programme now works with 18 of 32 local authorities to increase local and organic ingredients in school meals. In Wales, the Sustainable Food Places partnership, delivered by Food Sense Wales, promotes healthy, sustainable food in seven local authority areas. Soil Association Certification, our trading arm, works with over 6,000 businesses—farmers, growers, retailers, and manufacturers—in more than 50 countries, certifying over 14 million hectares of forest globally. A third of Wales' organic farms are certified by Soil Association Certification.

Introduction

Soil Association Cymru welcomes this inquiry and we are grateful for the opportunity to submit evidence. Soil health is central to resilient, productive farming and to tackling the climate, nature and health emergencies, but for far too long soil has been in the shadows of environmental policy when compared to air, water, and biodiversity. As such this crucial natural resource has been left relatively unprotected and undermeasured.

Welsh Government has made progress in building the knowledge base on Welsh soils, and there may be opportunities for soil protection, restoration and research through the Sustainable Farming Scheme. However, Wales lacks a legally binding soil health target and national soil strategy and action plan.

1. The role of soils in agricultural systems

1.1 Healthy soils are essential to our ability to produce food, to control flooding and droughts and to limit the impacts of climate change.

1.2 The Food and Agriculture Organisation of the UN defines soil health as "the capacity of soil to function as a living system, with ecosystem and land use boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health..."[1] The FAO also suggests that "a healthy soil does not pollute its environment and does contribute to mitigating climate change by maintaining or increasing its carbon content".

1.3 Knowledge about soils and soil health remains incomplete, notably about the variety of soil life and its role in sustaining soils.

1.4 Arbuscular mycorrhizal fungi and soil bacteria support plant growth by improving soil structure and recycling nutrients. The fungi act as root extensions, boosting nutrient uptake and helping to bind soil.

2. The state of soils in agricultural systems

2.1 In the last century, conversion of natural to agricultural ecosystems combined with detrimental practices such as deep and repetitive tillage, lack of organic amendments, overgrazing, monoculture and long bare-fallowing periods have caused the depletion of the Soil Organic Matter pool by 25%–75% across the globe[2] [3]. This is the biggest issue for soils because organic matter is critical to soil health, biodiversity, productivity and carbon storage.

2.2 Particular risks to soil organisms and organic matter arising from farming practices that prevailed since the latter half of the 20th century include:

2.3 Over-application of synthetic fertilisers, which can reduce soil organic matter levels and increase soil acidity, reducing the habitat quality for soil organisms and the diversity of soil microorganisms. Reduced soil life and function affects crop growth, development and disease incidence. By reducing soil life synthetic fertilisers can create dependency as the soil loses its natural ability to supply nitrogen and other elements and nutrients to plants, whilst the excessive application of chemicals leach from soils, polluting environments near and far. The latest Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP) National Trends and Glastir Scheme evaluation Report (2025)[4] notes that the majority of improved grassland sites surveyed (72%) have "soil acidity levels which remain below the production threshold which is most likely linked to the continued use of synthetic fertiliser without the accompanying use of lime".

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[1] Plant Production and Protection Division: What is a healthy soil?

[2] Lal, R., 2011. "Sequestering carbon in soils of agro-ecosystems," Food Policy, Elsevier, vol. 36 (Supplemen), pages 33-39, January.

[3] Sanderman et al., (2017) Soil carbon debt of 12,000 years of human land use, Proc. Natl. Acad. Sci. U. S. A., 114 (2017), pp. 9575-9580

[4] Report 105. Wales National Trends and Glastir Evaluation.pdf

2.4 Repeated cultivations, physically disrupting the habitat for soil organisms and, by aerating the topsoil, accelerating the microbial breakdown of soil organic matter. One major cause for concern is the reduction in arbuscular mycorrhizal fungal diversity and biomass in UK soils. These are fungal networks associated with most crops that provide key benefits and are keystones within healthy soil communities.

2.5 The prevalence of monoculture crops, which fail to provide the variety of conditions necessary for a diverse range of soil organisms to thrive.

2.6 Pesticides that can kill not only the intended target, but also other beneficial organisms. Some pesticides are known to persist in soils, long after their intended use. This chemical contamination leads to a decrease in soil biodiversity.

2.7 The latest ERAMMP National Trends and Glastir Scheme evaluation Report (2025)[2] data for soils indicates:

- stability in the national topsoil carbon concentration albeit an 8% loss in topsoil carbon concentration in arable and horticulture habitats
- 6-32% increase in soil compaction
- 4% of soils in Wales eroded or disturbed
- a 15% increase in phosphorus levels in improved grassland soils and three-fold increase in the number of improved grassland sites exceeding the leaching threshold for water quality
- a two-fold increase in the number of sites exceeding the leaching threshold for phosphorus in arable soils and a 7.7% loss of topsoil carbon
- 72% of improved grassland sites retain soil acidity levels below production thresholds

2.8 The underlying driver of soil degradation in the UK has arguably been the specialisation and separation of arable and livestock production, in pursuit of ever cheaper commodity crops, but at great cost to the environment, health and animal welfare.

2.9 Around 3.9 million hectares of farmland in England and Wales are at risk of compaction, largely due to late harvesting of crops (eg maize) and over-cultivation, which have disrupted traditional soil-regenerating practices.

2.10 In eastern England, arable soils degrade as synthetic inputs replace organic matter and diverse crop rotations. Heavy machinery worsens compaction, affecting productivity, carbon storage, and flood resilience.

2.11 In Wales and the west of England, intensive livestock farming produces more manure and slurry than soils can absorb. The Wye catchment sees over 6,000 tonnes of phosphorus annually, mainly from the rapidly growing poultry sector[5].

[5] Re-focusing Phosphorus use in the Wye Catchment

2.12 Manure phosphorus in the Wye catchment exceeds land needs by 45%, with the surplus polluting rivers and causing serious ecological harm.

2.13 In contrast to the risks to soil health associated with these farm types, organic farms have healthier soils. When compared to non-organic farms, organic farm soils perform significantly better against a range of soil health indicator. Long term studies have shown higher levels of soil microorganisms on organic farms compared with non-organic farmland[6] and organic farms have higher levels of soil organic matter[7]. They are also found to show better resilience against drought[8].

3. Monitoring of soil health

3.1 Despite an increasing interest in recent years, the existing data on soil health remains limited. Without data it is difficult to know where to start in order to protect and restore soils.

3.2 The data that does exist is fragmented and disjointed, as it is recorded by a variety of businesses and institutions, with different methods of soil sampling and analysis. Gaps in the publicly available data sets on Wales' varying soil types, functions and condition makes it difficult to measure progress or to establish a baseline for farmers to work with.

3.3 Much of the UK has been stuck for far too long in a circular bind, in which there are no agreed legally binding soil health improvement targets, due to insufficient data to establish a national baseline, and national soil monitoring schemes lack investment because soil health isn't prioritised relative to other focus areas like water, air and biodiversity with legally binding targets.

3.4 The European Union Soil Strategy for 2030 identified the lack of legislation as a key cause of soil decline in the EU. A 2023 directive will introduce mandatory soil health monitoring across all land types, covering chemical, physical, and biological properties. We discuss the need for legally binding soil targets to drive action in Wales in Section 6.

3.5 The Soil Association believes farmers have a key role to play in gathering data to help monitor soil health. Many are already doing so – as explored by various field labs within

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[6] Henneron, L et al. (2015) 'Fourteen years of evidence for positive effects of conservation agriculture and organic farming on soil life', Agronomy for Sustainable Development, 2015, 35:1 169 – 181 doi:10.1007/s13593-014-0215-8.

[7] Tuomisto et al. (2012) Does organic farming reduce environmental impacts? A meta analysis of European research. Journal of Environmental Management, 112, December 2012, 309-320

[8] Muller et al. (2016) Organic farming, climate change and beyond. IFOAM EU and Fibl, p12: "organic farming systems are more resilient to changing weather conditions, such as extreme droughts and extreme rainfall."

the Innovative Farmers Programme (eg "Collective approach to improving soil health in the Orton Fells"[9]), which supports farmer-led research and innovation.

3.6 We believe that all farmers should know their soil health and how it compares to similar farms. With proper support, farmers can monitor and improve soil health, helping to fill gaps in our understanding of soils and uncover opportunities for funding and innovation. We provide views on the Sustainable Farming Scheme in section 5.

3.7 The Sustainable Soils Alliance recently identified[10] 26 soil metrics in use within 34 schemes or initiatives in widespread use by organisations and governments looking to influence or prescribe how farmers measure and assess their soil. For on-farm soil health monitoring to be most effective we urgently need a cohesive, standardised approach that will help join the dots between the various sectors involved – from farmers, to businesses, researchers, and policymakers.

3.8 The Global Farm Metric[11] developed by the Sustainable Food Trust provides a common framework for farm sustainability. The Soil Association partnered with the Global Farm Metric as official delivery partner in the UK, launching Soil Association Exchange[12] in 2022. The service helps farmers collect data on sustainability metrics like biodiversity, water, and soil health, to improve farm sustainability and access to new finance opportunities.

3.9 For soil health, Soil Association Exchange gathers data across nine metrics (soil organic matter, soil organic carbon stocks, bulk density, Visual Evaluation of Soil Structure, total Nitrogen and C:N balance, earthworms, soil cover %, pH, and contextual soil information)[13]

3.10 Remote sensing technology is emerging to help target areas for in-field assessment, and for in-field assessment to help refine remote sensing data[14]. Soil Association is a delivery partner in a Horizon Europe Framework Programme project to validate and develop soil health indicators. The project is creating an open access European-wide digital infrastructure, termed "AI4SoilHealth" . This infrastructure will be used for assessing and continuously monitoring soil health metrics by land use and/or management. A soil health measurement app is due to launch in 2026, and the UK pilot site is the UK Centre for Ecology & Hydrology's (UKCEH) Plynlimon research catchment.

[9] Soil health in Westmorland Dales
[10] UK Soil Health Measurement Research.pdf
[11] https://www.globalfarmmetric.org/
[12] Profitable and sustainable farming | Soil Association Exchange
[13] 21f3ea_5acb58c9b5724003bcb16c563fa808c6.pdf
[14] Soil mapping for precise land management | Farming Connect

4. Classification of soils for land use

4.1 To date, 747 soil types have been identified in England and Wales, each with distinct properties shaped over geological time. These soils determine land productivity, influencing suitability for crops, livestock, and forestry, and play a key role in erosion, flood risk, and carbon storage.

4.2 We need a strategic approach to delivering the types of nature and climate friendly farming and the habitats that we need to avert the nature and climate crises and ensure food resilience.

4.3 We believe a land use framework informed by soil classification mapping is a key tool for shaping the policy needed to deliver this new approach to land. Soil Association has been calling for land use frameworks for years to give the clarity and confidence that nature-friendly farmers, land-users and progressive businesses need to invest in the future of the countryside.

4.4 It is therefore encouraging that Welsh Government Soils and Land Use Policy Team are considering the development of a soil functions and services map of Wales[15].

4.5 Welsh Government's "Soil function maps resource review" report of July 2024 states that "the aim of the map will be to provide best available information to support and balance land use decisions where trade-offs between soil functions and land use demands compete....The map will allow specialists and non-specialists to understand and quantify the impact of land use and policy decisions on a range of soil functions and services."

4.6 Given that not all land is equally productive for food and that the way that land is farmed will determine whether Welsh Government can avoid unnecessary trade-offs between food, nature and climate we would also add that a soil function and services map must do more than merely guide land use change decisions, as a refinement of planning policy regarding the 'best and most versatile land' of ALC Grades 1-3a. A strategic approach to land use is needed to help target government support and regulation to encourage the farming *practices* or farm *types* that best match the carrying capacity or environmental vulnerabilities of the land.

4.7 On high yielding land, for example, regenerative practices and the use of 'eco-infrastructure' such as wildflower habitats, shelter belts and hedges can boost pollinators and pest control services to help sustainably optimise yields. Less productive land suits more extensive farming practices, including those which create and maintain semi-natural habitats, including meadows, heath, and wood pasture, which are critical for carbon sequestration and nature recovery. To tackle the nature and

[15] Soil function maps resource review, Welsh Government Soil Policy Evidence Programme 2023-24 report (July 2024)

climate crises, it is also critical to protect, restore and create woodlands, wetlands, and peatlands.

5. The policy and legislative mechanisms to protect soils and productive land (including the Sustainable Farming Scheme, National Minimum Standards and planning policy (amongst others))

5.1 To achieve healthy soils we need to focus on restoring multiple soil functions. This requires changes across the whole agricultural system. The Soil Association report, "Saving our Soils: healthy soils for climate, nature and health"[16] (2021) offers a suite of policy actions to support this:

5.6 Provide clear incentives for farmers to monitor their soil health and improve it above their soil type baseline. Commit to a legally binding soil health target underpinned by properly funded national soil monitoring scheme.

5.7 Support farmers to increase plant and animal matter being returned to soil through an increase in cover crops/green manures and a reintegration of grass-fed livestock. This then needs to connect with policies around nutrient pollution reduction.

5.8 Increase incentives for farmers to increase use of minimum or no-till systems, along with support for drastically reduced pesticide use and conversion and maintenance of organic farming.

5.9 Covering up bare soil – farmers should be supported to increase use of fertility-building green manures/cover crops, or the of the area under permanent grassland and longer leys, particularly on vulnerable soils. A strict regulatory baseline needs to be developed to keep vulnerable soils better covered. Monitoring should include a minimum percentage of bare soils at any time of year.

5.10 Bring more trees into the farmed landscape – agroforestry systems protect soils from erosion by wind and water

5.11 Reducing compaction - awareness of this issue should be raised amongst farmers via advisory services and written guidance, and baseline regulations should have compaction prevention as a clear standard.

5.12 Designing crop rotations to improve soil health – longer and better rotations and intercropping should be incentivised alongside better support for farmers to move to niche and protein crops. New baseline regulations should help the transition away from basic rotations.

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[16] https://www.soilassociation.org/media/24941/saving-our-soils-report-dec21.pdf

Sustainable Farming Scheme

5.13 Elements of many of the Soil Association's 'Saving our Soils' policy actions are contained in the Sustainable Farming Scheme: proposed scheme outline (2024).

5.14 With proper guidance and data safeguards, UA3: Soil Health Planning could create a valuable national soil dataset, benefiting the SFS and enhancing soil regulation. Farmers' concerns about data privacy must be addressed to encourage uptake of the SFS.

5.15 Soil test results will also require interpretation to ensure that appropriate management responses and potential SFS actions are identified. The SFS should provide guidance to help all farmers in the scheme understand soil structure and soil biology if these are assessed, and to signpost to further sources of advice and SFS Optional and Collaborative actions.

5.16 There is a clear need and opportunity to turn Universal layer plans and reports into actions, such as through the Optional and Collaborative layer. Without this, the level of ambition of a number of Universal actions will remain similar to regulatory baselines in Wales or elsewhere in the UK.

5.17 As such, alongside the need to 'ratchet up' their requirements over time, such as to include requirements to assess other indicators of soil health (eg earthworm numbers and a Visual Evaluation of Soil Structure), the overall effectiveness of the soil standards will rely on the ambition of other SFS requirements, and how the scheme is delivered as a whole. Payment rates and advisory support for practices like nutrient and pest management and support for organic farming will be crucial for promoting soil-focused farm practice.

5.18 Similarly, opportunities to reduce risks to vulnerable soils could be delivered by Universal Action 13: Tree Planting and Hedgerow Creation Opportunity Plan if guidance and mapping involves soil types and vulnerabilities, plus topography and potential nutrient and soil runoff pathways, to suggest parts of the farm where tree planting or hedgerow expansion could deliver benefits for soil health.

5.19 SFS support for organic farmers (and conversion to organic) will be crucial, particularly to provide support for farmers to transition to sustainable farming practices in catchments where soils and water are at risk from the cumulative impacts of agricultural intensification. We welcome the rollover of Organic Support Payment in 2025, but the sector needs clarity around what support will be available in the SFS in 2026.

5.20 Current soil health regulations mainly target individual issues in a fragmented manner. A 2020 study by the University of Sheffield and ADAS found that while farmers recognised the importance of sustainable soil management, few applied a wide range of practices

holistically. Since farms are complex systems, future soil regulations and SFS support will be more effective if delivered using a whole farm system approach.

5.21 We suggest that further protection of soils in Wales could be achieved through SFS requirements towards maize growing, a high risk crop for soil erosion. The Agriculture and Horticulture Development Board (AHDB) notes that much of Wales is regarded as marginal for maize growing, being wetter and more exposed than much of England.

National Minimum Standards

5.22 We believe the current regulatory framework across Wales is too fragmented and we supported the Agriculture White Paper (2020) proposals to consolidate existing legislation under a set of National Minimum Standards (NMS), applicable to all farmers and land managers in Wales regardless of whether they choose to enter the SFS. This will provide a level playing field across Wales and will ensure that the SFS is not undermined by farming businesses that are not participating.

5.23 We wish to see a commitment to develop an NMS framework. There are potential risks to soils, water, and biodiversity arising from further intensification of agriculture if farmers choose not to participate in the SFS. Furthermore, value for public money is reduced if SLM gains secured through scheme payments are offset by regulatory failure to control damaging practices or pollution on the same farm or elsewhere.

5.24 Within the Basic Payment Scheme's Cross Compliance framework a regulatory baseline for soil is provided by Good Agricultural and Environmental Conditions (GAEC). GAECs 4 (minimum soil cover), GAEC 5 (managing land to limit soil erosion) and GAEC 6 (maintenance of soil organic matter) represent the minimum standards of protection against soil loss and damage to soil health. We support recommendation 6 of the recently published statutory review of the Control of Agricultural Pollution Regulations: 2025 to bring GAEC 5 (managing land to limit soil erosion) into regulation within 18 months. However, GAEC 4 (minimum soil cover) is a non-statutory standard and gains function from Cross Compliance. GAEC 4 should be brought into the SFS and subsequently into NMS (alongside other soil-related regulation) to maintain protection against soil loss across Wales.

6. The potential for legal frameworks and targets for soils

6.1 Welsh Government's support for the Global Biodiversity Framework requires cutting nutrient losses to the environment by half and pesticide losses by two-thirds by 2030. While the SFS may help, Wales lacks a binding soil health target and national soil strategy to drive lasting progress.

6.2 It is welcome that Welsh Government have invested in soil monitoring in the last 10 years through the Environment and Rural Affairs Monitoring and Modelling Programme

and have established a Soil policy evidence programme to review evidence of the condition of Welsh soil and how agricultural practice is affecting it.

6.3 Wales does not yet have a dedicated soil strategy and soil action plan. The publication timeline for Welsh Government's Soil Policy Statement is currently unclear. The statement will set out Welsh Government's "vision for the sustainable management of agricultural soils for future generations"[17].

6.4 We suggest an overarching vision should refer to all soil, acknowledging the importance of soil in urban and non-agricultural locations. These soils are often overlooked by policy, and due to lack of knowledge and understanding by managers are at risk of degradation.

6.5 The Well-being of Future Generations Act national indicator for 'Concentration of carbon and organic matter in soil,' is a key metric, as it reflects soil health, fertility, and its ability to sequester carbon, thus contributing to climate change mitigation.

6.6 However, Well-being indicators and a Soil Policy Statement alone are not enough. A comprehensive soil strategy and action plan that includes the policy, monitoring and investment is required to ensure that all soils in Wales are managed in a way that improves their health and productivity, supports biodiversity, and contributes to climate change mitigation.

6.7 Section 4 of the Agriculture (Wales) Act 2023 requires the Welsh Ministers to prepare and publish indicators and targets to measure progress towards achieving the SLM objectives. We would like to see a soil health target and indicators included in this suite.

[17] Soil management | GOV.WALES