

MODULE 1 SUSTAINABLE LAND MANAGEMENT LEGISLATION, SYSTEMS AND SCHEMES

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The challenges include



- Land use change
- Pollution & nutrient enrichment
- Over exploitation
- Invasive species
- Afforestation & forest management & deforestation
- Air pollution
- Climate change
- Aquifers, abstraction & modification of water bodies
- Over & under grazing
- Recreational damage such as footpath over use
- Renewable energy? (wind turbines, pylons)
- Succession/abandonment etc bracken & gorse

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By adopting this plan we will achieve:

Published 11th January 2018

1. Clean air.
2. Clean & plentiful water.
3. Thriving plants & wildlife.
4. Reduced risk of harm from environmental hazards (flooding and drought)
5. Using resources from nature more sustainably & efficiently.
6. Enhanced beauty, heritage and engagement with the natural environment.

In addition, we will manage pressures on the environment by:

7. Mitigating & adapting to climate change.
8. Minimising waste.
9. Managing exposure to chemicals.
10. Enhancing biosecurity.

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Department
for Environment
Food & Rural Affairs

Defra's 25 Year Environment Plan

- **'Natural capital**, sum of ecosystems, species, freshwater, land, soils, minerals, air & seas.
- Bring value to people & the country at large.
- Providing food, clean air & water, wildlife, energy, wood, recreation & protection from hazards.
- **70% of UK surface is farmed** - Natural Capital is largely looked after by land managers.
- Should land managers be paid for helping provide ecosystem services?
- How do we measure them?

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Goals of the 25 YEP.	Examples of existing indicators relevant to each goal*
Clean air	Emissions of key pollutants; number of high or moderate air pollution days; area of sensitive habitats with excessive levels of air pollution.
Clean and plentiful water	Water quality in rivers and lakes, bathing waters, and groundwater; inputs of hazardous substances to the marine environment.
Thriving plants and wildlife	Extent and condition of protected sites on land and at sea; status and trends of wild species and habitats.
Reduced risk of harm from environmental hazards	Number of households better protected from flooding.
More sustainable and efficient use of resources	Area of sustainably managed and harvested woodland; fish stocks harvested within safe limits; amount of raw materials consumed per person and resource productivity.
Enhanced beauty, heritage and engagement with the natural environment	Area of woodland; people visiting the natural environment and volunteering for conservation activities.

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The Agriculture Act 2020



- A new approach to domestic agriculture policy
- Financial Assistance
- Direct Payments after EU exit
- Other financial support after EU exit
- Food & agricultural markets
- Intervention in agricultural markets
- Transparency & fairness in the agri-food supply chain.
- Collection & sharing of data
- Fair dealing with agricultural producers & others in the supply chain
- Producer Organisations
- Matters relating to farming & the countryside
- Marketing standards, organic products & carcass classification
- WTO Agreement on Agriculture
- Wales Northern Ireland
- Stakeholders' overall views

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Policy paper
Clean Air Strategy 2019:
executive summary
Published 14 January 2019

Environment Act 2021
2021 CHAPTER 38

An Act to make provision about targets, plans and policies for improving the natural environment, for emissions and exposure about environmental protection, for the Office for Environmental Protection, about waste and resource efficiency, about air quality, for the control of products that fail to meet environmental standards, about water, about water and biodiversity, the enforcement committee, about the regulation of chemicals, and for connected purposes.
[9th November 2021]

The priority areas are:

- (a) air quality;
- (b) water;
- (c) biodiversity;
- (d) resource efficiency and waste reduction.

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The National Pollinator Strategy

- promote opportunities to farmers
- farm advice providers
- pollinator events
- Integrated Pest Management (IPM)
- ongoing research on IPM under active review,
- share IPM practices with farmers and growers
- revise and re-publish guidance on insecticide best practice;

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Net Zero
Strategy: Build
Back Greener

Ten Point Plan

- Advancing Offshore Wind
- Driving the Growth of Low Carbon Hydrogen
- Delivering New and Advanced Nuclear Power,
- Accelerating the Shift to Zero Emission Vehicles
- Green Public Transport, Cycling and Walking
- Jet Zero and Green Ships
- Greener Buildings
- Investing in Carbon Capture, Usage and Storage
- Protecting Our Natural Environment
- Green Finance and Innovation

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Environmental
Improvement
Plan 2023
First revision of the
25 Year Environment Plan

- Goal 1 Thriving plants and wildlife
- Goal 2 Clean air
- Goal 3 Clean and plentiful water
- Goal 4 Managing exposure to chemicals and pesticides
- Goal 5 Maximise our resources, minimise our waste
- Goal 6 Using resources from nature sustainably
- Goal 7 Mitigating and adapting to climate change
- Goal 8 Reduced risk of harm from environmental hazards
- Goal 9 Enhancing biosecurity
- Goal 10 Enhancing beauty, heritage and engagement with the natural environment

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How shall we measure Natural Capital?

Key drivers are

- Clean Water
- Healthy Soil
- Wildlife
- Clean Air
- Quality
- Quantify
- Monetise

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Summary of policies

- Using and managing land sustainably
- Recovering nature and enhancing the beauty of landscapes
- Connecting people with environment to improve health and wellbeing
- Increasing resource efficiency and reducing pollution and waste
- Securing clean, healthy, productive & biologically diverse seas & oceans
- Protecting and improving our global environment

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Key Dates



- 1992. UN Conference on environment & development (Rio Janeiro)
- 1997. Kyoto Protocol on Climate Change
- 2002. World summit on Sustainable Development (Jo Burgh. SA)
- 2015. COP 21. 4% per mill proposed
- 2030. All Soils will be managed Sustainable
- 2040. NFU Carbon Net Zero
- 2042. Elimination of all avoidable plastic waste
- 2050. Achieve Carbon Net Zero (Gov. 25 yr plan)
- 2060. 12% of England will be covered with woodland

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'Biodiversity' - a new word

- The phrase was created by the zoologist **E Wilson** to summarise 'Biological diversity, the variety of life that exists around us'

At the Rio Earth Summit in June 1992, **150 heads of State** signed up to the UN Convention on Biological Diversity (UN CBD)

- Calling to preserve and enhance biodiversity.

This treaty provided a legal framework to conserve biodiversity. It cascaded responsibilities to signatories to enact.

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Kyoto Protocol Agreement on climate change (11 Dec 1997)

- First international treaty to set legally binding targets to cut greenhouse gas emissions, was adopted 27 years ago.
- Operationalizes the UN Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce GHG emissions in accordance with agreed individual targets.

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Conference of the Parties (COP)

- An international climate meeting held each year by the UN
- COP is short for "Conference of the Parties," meaning those countries who joined—are "party to," in legal terms—the international treaty called the:

U.N. Framework Convention on Climate Change (UNFCCC).

COP 21 in 2015. 4% per mill

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Group partridge endangered species due to loss of habitat

Wildlife & Countryside Act 1981

- **Purpose:** Conserves wildlife, protects species, and preserves natural habitats.
- **Protected Areas:** Establishes national parks, wildlife sanctuaries, and reserves.
- **Species Protection:** Bans hunting, poaching, and trade of endangered species.
- **Regulated Trade:** Controls illegal trade of wildlife and related products.
- **Enforcement:** Empowers authorities to take legal action against offenders.
- **Community Involvement:** Encourages local participation in conservation.
- **Ecological Importance:** Maintains biodiversity and ecological balance.

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Brown hare endangered species due to loss of habitat

The Conservation of Habitat & Species Regulation 2010

- The **Conservation of Habitats and Species Regulations 2010** is UK legislation designed to implement the **EU Habitats Directive** and **Birds Directive**, focusing on the protection of habitats, species, and biodiversity. It ensures compliance with international conservation commitments
- This regulation underpins the UK's commitment to safeguarding wildlife and habitats in line with European and global conservation goals.

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The Conservation of Habitat & Species Regulation 2010



Key Points:

- **Purpose:** Protects habitats and species of European importance, ensuring biodiversity conservation.
- **Natura 2000 Network:** Establishes and manages Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).
- **Protected Species:** Provides strict protection for species listed in the regulations, prohibiting harm, capture, or disturbance.
- **Planning and Development:** Requires ecological assessments to ensure no adverse impact on protected sites or species from proposed developments.
- **Licensing:** Allows activities affecting protected species or habitats under strict conditions and only for essential purposes.
- **Public Authorities:** Imposes duties on authorities to consider conservation objectives in their activities.
- **Enforcement:** Provides penalties for violations, including fines and legal action.

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Countryside & Rights of Way (CROW Act) 2000



Normally gives a public right of access to land mapped as open countryside (mountains, moor, heath or down) or registered open common land.

These are known as open access land

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Farming Rules for Water April 2018

- Rules in place so farmers manage their land, to **avoid water pollution** and to benefit their business.
- Rules apply to all farmers in England to ensure soil is kept on land, nutrients are applied to match crop need and livestock, fertiliser and manures are kept out of water.
- **Environment Agency** is responsible for enforcing these rules.
- Will do this through farm inspections work and check areas like records, soil tests and evidence of pollution.

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Basic Payment Scheme (BPS)



- **This scheme is now closed in England to new entrance**
- Farmers with at least 5 ha of agricultural land.
- Businesses not allowed to claim if they carry out certain activities.
- Rules about what you can and cannot do with your land if you claim BPS.
- An arable farmer might need to grow **3 different crops** and use **5%** of land to do specific things that are good for the environment.
- Needed to make decisions about what to do with land so that they follow the rules.
- If you claimed BPS you must also follow the rules.
- Final BPS claim will be 2024
- Delinked period from 2024 - 2027

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Delinked payments: replacing the Basic Payment Scheme



- BPS will end after the 2023 scheme year – now closed
- BPS replaced in England with delinked payments in 2024.
- RPA make delinked payments each year from 2024 to 2027.
- BPS replaced in England with delinked payments in 2024.
- When payments delinked, will not need any land to receive payments.
- Delinked payments phased out by the end of 2027.

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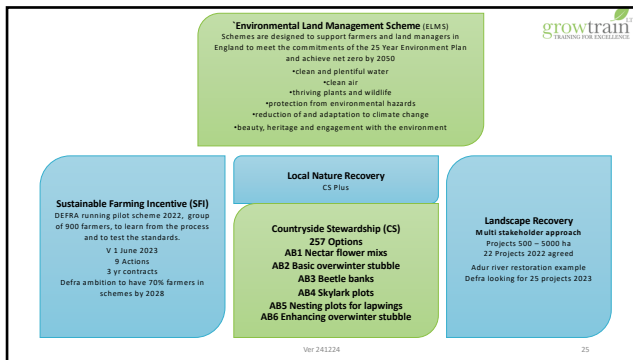
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Environmental Schemes in England

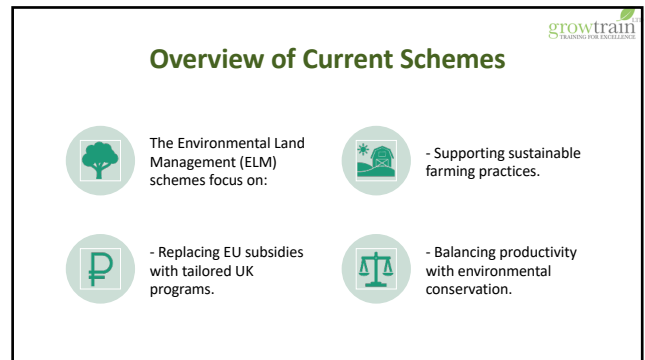


An Overview of Sustainable Farming and Conservation Initiatives

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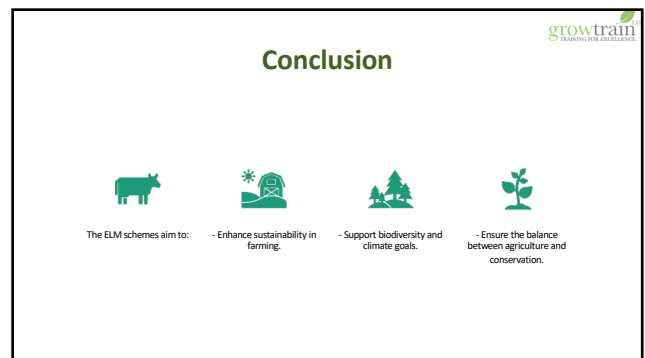
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The SFI England supports farmers to adopt environmentally friendly practices while maintaining productivity



- **Purpose:** Encourages sustainable farming to improve soil, biodiversity, water quality, and climate resilience.
- **Eligibility:** Open to farmers with eligible land, including those in other environmental schemes.
- **Focus Areas:**
 - Soil health improvement.
 - Habitat creation and wildlife support.
 - Pollution reduction and water management.
 - Climate action through carbon sequestration and emission reductions.
- **Benefits:** Flexible, tailored agreements with financial support for sustainable practices. The SFI aims to enhance farming sustainability and contribute to national environmental goals.

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Sustainable Farming Incentives (SFI) Actions



- Soils
- Moorland
- Hedgerows
- Integrated pest management
- Nutrient management
- Farmland wildlife on arable and horticultural land
- Farmland wildlife on improved grassland
- Buffer strips
- Input grassland



Sustainable Farming Incentive (SFI)
Handbook for the SFI 2023 offer
www.gov.uk/defra/sustainablefarmingincentive

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Sustainable Farming Incentives (SFI) Actions



- Across SFI and CS, payments will be increased on **average by 10%.**
- Higher payment rates will be applied to **existing agreements.**
- **More options** will be available to apply for, or to add to an existing SFI agreement, from summer 2024.
- By the end of February Defra has said it received **11,000 SFI applications.**



Sustainable Farming Incentive (SFI)
Handbook for the SFI 2023 offer
www.gov.uk/defra/sustainablefarmingincentive

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Countryside Stewardship grant finder



From: [Rural Payments Agency and Natural England](#)

Search for options, supplements and capital items to include in your Countryside Stewardship application. Find out about each Countryside Stewardship scheme and check if you're eligible before you apply for a grant.

Search	266 grants	Subscribe to feed
Grant type	AF2: Plant an agroforestry fruit tree	
Land use	AP1: Plant an agroforestry woodland tree	
Tiers or standalone items	PA3: Woodland management plan	
Funding (per unit per year)	AF3: Species diversity bonus supplement	
	PA7: Species management plan	
	SP3: Bracken control supplement	
	RP3: Watercourse crossings	

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The Countryside Stewardship (CS) scheme has three tiers:



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CS Capital Grants (CG)



- **Purpose:** Support environmental projects in rural areas.
- **Eligibility:** Farmers, landowners, and rural businesses.
- **Funding Areas:** Biodiversity, water quality, soil health, etc.
- **Application:** Requires a detailed project proposal.
- **Grant Amounts:** Varies by project type and scale.
- **Requirements:** Must meet government standards and monitor progress.
- **Example Projects:** Habitat creation, water management, heritage preservation.

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Facilitation Fund 2023: Countryside Stewardship



- **Key Points:**
- **Purpose:** Encourages collaborative efforts to enhance biodiversity, water quality, and landscape management.
- **Eligibility:** Open to groups like **farmer clusters** and **land management groups**.
- **Funding:** Supports group coordination, expert advice, and shared environmental practices.
- **Focus Areas:** Includes habitat restoration, watercourse management, and wildlife corridors.
- **Duration:** Typically up to 5 years.
- **Benefits:** Facilitates large-scale conservation, promotes knowledge sharing, and enables collective action.

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Farm Mapping for potential biodiversity areas

Note 'Stacking' is allowed where the same area could be used for different funding opportunities
Systems are being looked at to oversee how this will be recorded



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Biodiversity

- Differences between living organisms, habitats, plants.
- Includes diversity within species, between species and their ecosystem.
- Essential for ecosystem, food chains, soil health, structure, natural balance and sustainability.
- Part of the carbon cycle
- To promote biodiversity need a source of food from plants all year round.
- Combination of winter & spring crops with different flowering times to provide AYR food source



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What is natural capital?

- **World's stocks of natural assets which include:**

- **geology,**
- **soil,**
- **air,**
- **water**
- **all living things.**

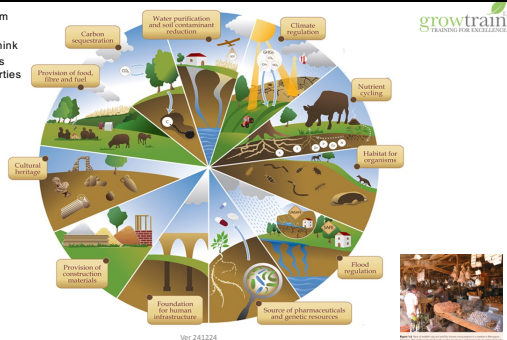
- It is from this **Natural Capital** that humans derive a wide range of services, often called ecosystem services, which make human life possible

Only 10% of the value of the services woods and forests provide is through timber



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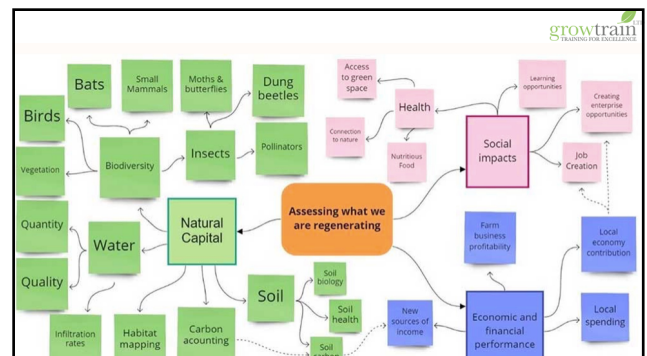
A conceptual diagram was developed by Adhikari and Hartemink (2016), which relates individual soil properties to soil ecosystem services.



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Climate Change



- Long-term **shifts in temperatures** and weather patterns.
- Can be natural, due to changes in sun's activity or volcanic eruptions.
- Since the 1800s, **human activities**, has been primarily course due to the burning of fossil fuels.
- These generates **GHG** emissions insulate the Earth, trapping the sun's heat and raising temperatures.
- Main GHG **carbon dioxide and methane**.
- **Cutting down forests** can also **release carbon dioxide**.
- Energy, industry, transport, buildings, agriculture and land use among the **main sectors** causing GHG

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Agriculture GHG



GHG Nitrous Oxide – Produced under anaerobic conditions

CO₂ (GHG) – burning fossil fuels - cultivations

Methane (GHG) – Livestock – ruminants



Ammonia (Not GHG) Air pollutant – particulates – from livestock housing – fertiliser application

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Integrated Pest Management (IPM)

A coordinated and planned strategy for the prevention, detection and control of pests, weeds, and diseases.

Part of the Sustainable Use Directive, the UK government is required to show that UK growers are using integrated pest management practices.

Cultural – Biological – Chemical

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Integrated Crop Management (ICM)

Method of farming that balances the requirements of running a profitable business with environmental responsibility.

It includes practices that

- avoid waste,
- enhance energy efficiency
- minimise pollution.

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Integrated Farm Management



Whole farm business approach - delivers more **sustainable farming**.

Combines best of **modern tech. with trad. methods** to deliver prosperous farming that enriches the environment - engages local communities.

9 sections across the entire business:

- Organisation & Planning,
- Soil Management & Fertility
- Crop Health & Protection,
- Pollution Control & By-Product Management
- Animal Husbandry,
- Energy Efficiency,
- Water Management,
- Landscape & Nature
- Conservation & Community Engagement.



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Regenerative agriculture

A sustainable approach to agricultural

Holistic approach that focuses on interconnection of farming systems and ecological system as a whole.

It has five key principles

- minimising soil disturbance
- keeping soils covered
- increasing plant diversity
- keeping living roots
- integrating animals in the system.

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Conservation agriculture

- **Sustainable approach** to production aims to protect soil from erosion and degradation, improve its quality and biodiversity, contribute to the preservation of natural resources, water and air, whilst optimising yields.

Based on three core principles:

- minimum soil disturbance
- maintenance of permanent soil cover
- use of crop rotations with a diversity of crop species.

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Organic farming

An agricultural system that uses ecologically based

- pest controls
- biological fertilizers derived largely from
 - animal and plant wastes
 - nitrogen-fixing cover crops.

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Organic Farming Certification

Livestock important role on most organic farms, although stockless management is possible.

Organic standards address all aspects of livestock management including:

- stocking and housing requirements,
- feed and veterinary medicines
- transport and slaughter.

Organic farming provides a range of environmental benefits:

- improved natural soil health and fertility,
- increasing carbon storage in soil
- wildlife and biodiversity.

Organic farms have up to 50% more wildlife on average.

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Organic Farming Certification

Financial benefits

- On-farm production
- Processing involving food storage, packing and storage, including on-farm processing
- Animal feeds production
- Re-labelling of products at any stage of the distribution chain
- Organic products imported from countries outside European Union, known as third countries

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Other Farming Systems

Extensive farming:

- Agricultural production system that uses small inputs of labour, fertilizers, and capital, relative to the land area being farmed

Intensive farming

- Type of agriculture, both of crop plants and of animals, with higher levels of input and output per unit of agricultural land area.
- Characterized by a low fallow ratio, higher use of inputs such as capital and labour, and higher crop yields per unit land area.

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Red Tractor Certified Scheme

- Represents over 20 years of leading British food standards.
- Collaborates with animal welfare experts, vets, agronomists, and the supply chain since 2000 to ensure traceable, safe, and carefully farmed products.
- Assurance spans the entire food supply chain with over 350 independent inspectors.
- Conducts over 60,000 inspections annually by trained and experienced inspectors.
- Logo used only on food meeting production, transport, storage, and packing standards as per licensing rules.
- Standards for all farming sectors (e.g., chicken, dairy, vegetables) are set by expert panels for robustness.

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LEAF Marque (LM)

- **Principles of IFM** underpin requirements of LM certification.
- Whole farm business approach delivers more sustainable farming.
- Tech. & trad. methods used with goal of delivering prosperous farming that enriches the environment and engages local communities.

Site-specific and continuous improvement across the farm including:

- Organisation and Planning,
- Soil Management and Fertility,
- Crop Health and Protection,
- Pollution Control and By-Product Management,
- Animal Husbandry,
- Energy Efficiency,
- Water Management,
- Landscape and Nature Conservation
- Community Engagement.

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Royal Society for the Prevention of Cruelty to Animals

- Farm animal welfare assurance scheme.
- Must comply with the RSPCA's stringent higher welfare standards.
- Standards cover every aspect of the animals' lives from birth through to slaughter.
- Label on a meat, fish or dairy product, means that the hatchery, farm, haulier and abattoir were all assessed and confirmed to have met the RSPCA's higher farm animal welfare standards.

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Environmental Management & Food Chain Supply Efficiencies

- conducting a waste assessment.
- improving purchasing to reduce waste.
- improving storage and inventory management.
- conserving energy.
- conserving water.
- preserving waterways.
- keeping waste out of drains.
- reducing waste outputs.

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ICROA

- QA standard for woodland creation projects in the UK, producing high-integrity, independently verified carbon units.
- Supported by the government, forest industry, and carbon market experts.
- Provides woodland carbon units exclusively in the UK.
- Recognized internationally for sustainable forest and carbon management standards.
- Endorsed by ICROA, the global body for voluntary carbon reduction and offset providers.
- Projects deliver social and environmental benefits for UK communities.
- Benefits include biodiversity, habitat creation, health and wellbeing improvements, farming support, local employment, and educational opportunities.

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PEATLAND CODE

A voluntary certification standard for UK peatland projects wishing to market the climate benefits of peatland restoration and provides assurances to voluntary carbon market buyers that the climate benefits being sold are real, quantifiable, additional and permanent.

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Hedgerow Carbon Code

- Hedgerows sequester carbon at **twice** the rate of woodland because of their three-dimensional linear structure and **England's hedges already store 9 million tonnes of carbon.**
- Will become the QA standard for hedgerows and aims to generate hedgerow carbon credits, independently certified by Organic Farmers & Growers – who already do the same for the Woodland Carbon and Peatland Codes.



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UK Farm Soil Carbon Code

- Will consist of a set of formal protocols that allow farmers to quantify & verify reduced greenhouse gas emissions & /or soil carbon capture as a result of adoption
- Code will be free to use & open access to all farmers.
- Straightforward, practical, affordable, accessible & achievable.
- Outcome-based, not practice-based. ng regenerative farming practices.
- Code will be applicable for different 'C accounting' purposes - offset registries, carbon insetters, carbon capture incentive schemes, ecosystem services & environmental investment products - whether carbon capture will be monetised or not.

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Nutrient Neutrality Approach

Ensuring development does not add to existing nutrient burden & this provides certainty that the whole of the scheme is deliverable in line with the requirements of the Habitats Regulations.

Achieving nutrient neutrality often requires mitigation as part of development, either in the form of onsite treatment of:

- wastewater & surface water runoff,
- or by offsetting any increase in nutrient loading by converting land on- or offsite with woodlands or wetlands.

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The Allerton Project (winter supplementary feeding)

- Researches effects of different **farming methods on wildlife and environment**, sharing results of research through advisory and educational activities.
- Undertaken on 320 ha demonstration farm based in Leicestershire.
- Identify management that delivers multiple benefits for rural landscape.
- Work covers **natural capital accounting, agri-environment schemes and regenerative farming systems**.
- From soil and water, to woodland and environmental habitat that increases biodiversity, aims to build farmland resilience.

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RSPB Hope Farm



- Took over Hope Farm in 2000, to demonstrate, research and encourage wildlife-friendly farming.
- Showing it's possible to run a successful farming business, that produces food, makes a profit, and is valuable for wildlife as well.
- Developing new farming techniques, that can then share with the rest of the farming community.

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The Big Three at Hope Farm



The three main needs of farmland birds are:

- A **safe place** to nest
- **Food in spring and summer** for their growing chicks
- **Food and shelter** over the winter

Hope Farm have been able to provide all these habitats through careful use of our agri-environment scheme and good farming practice.

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Environmental Legislation

- UK agriculture is in a period of significant change, with new government legislation & guidance focussed on the environment and agriculture.
- Developed due to the requirement to tackle global environmental challenges & the critical role UK agriculture can play within this.
- Important to understand these new policies in the UK, how they work and their key objectives and environmental
- The main pieces of legislation and government policy, along with their objectives and environmental goals, & how they relate to agriculture.

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Demonstration Test Catchments (water catchment research).

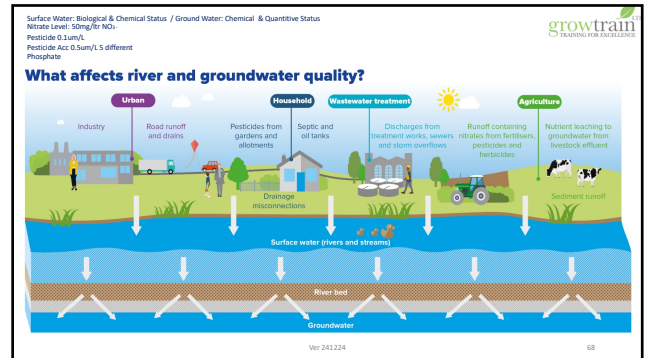
- **Keeping contaminants** from entering into waterways improves river quality and protects downstream communities.
- Appropriate land management in drinking water catchments: helps create sustainable farming practices

Catchment consists of both:

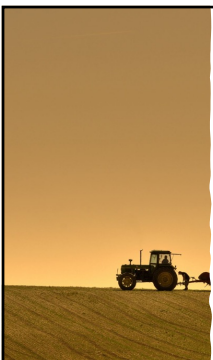
- surface (streams, rivers, lakes, estuaries) and subsurface (soil water, groundwater) waterbodies and is separated from neighbouring catchments by a region of higher topography known as the catchment boundary.

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Catchment Sensitive Farming: advice for farmers and land managers

CSF works with farmers and partners across England to produce food in a way that protects:

- water
- air
- Soil
- Adviser locally based with understanding of challenges farmers face.
- Latest advice and tailor it to best benefit your business.

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CSF provides locally informed, confidential, on-farm advice to help you make decisions on:

- soil management
- nutrient, slurry, and manure management
- ammonia emission reduction
- farm infrastructure and machinery set-up
- pesticide handling
- water resources and natural flood management
- local environmental priorities
- land management
- agricultural transition, including grants

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Get advice from CSF

You can ask CSF for advice by [emailing your local mailbox](#).

You must include:

- a brief description of your farm and query
- your farm address
- single business identifier (SBI) number (if you know it)
- your contact details

Reply based on the environmental priorities in your area and will either:

- arrange a 1:1 consultation with your local CSFA within an agreed timeframe
- link to other sources of advice and information
- focus support on farms that can make the greatest improvement to water and air quality.
- Get help for queries related to the [Countryside Stewardship](#).

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Working in partnership with CSF

CSF also works with a range of partners including:

- water companies
- local authorities
- trade bodies
- environmental organisations
- river trusts

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Working in partnership with CSF

This work includes:

- Flood & Coastal Resilience Innovation programme with local authorities & the Environment Agency
- part-funding farm advisers in partnership with rivers trusts and National Parks authorities
- producing videos, tools & factsheets with Voluntary Initiative and Innovation for Agriculture
- If your organisation is interested in working with CSF, email csf.partnerships@naturalengland.org.uk.

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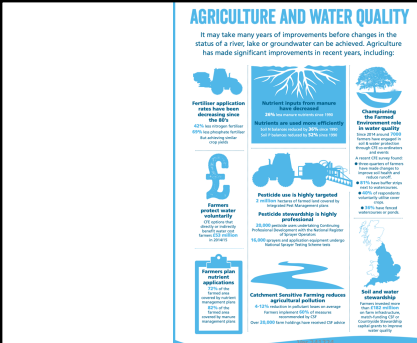
Championing the Farmed Environment (CFE)



<https://www.cfeonline.org.uk/>

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AGRICULTURE AND WATER QUALITY

It may take many years of improvements before changes in the status of a river, lake or groundwater can be achieved. Agriculture has made significant improvements in recent years, including:

- Herbicide applications** have been decreasing since the 80s. 47% less herbicide applied in 2019 compared to 1990.
- Nitrogen** applied from sources such as fertilisers has decreased by 10% since 2000.
- Nitrate** levels in groundwater have decreased by 10% since 2000.
- Pesticide use** is highly targeted. 2 million tonnes of pesticides are used annually, but only 100,000 tonnes are actually applied to crops.
- Farmers** are becoming more environmentally aware. 80% of farmers now have a plan to reduce their carbon footprint.
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FarmWildlife

- Farm Wildlife** is a partnership of organisations working together to provide a single source of best-practice management advice for wildlife on farmland
- Helping you to help wildlife on your farm
- Good conservation management** is about understanding the locally important wildlife, choosing the right measures and managing them in the right way.
- Farm Wildlife has been developed with farmers for farmers.
- Management approach** brings together best practice advice from a broad range of wildlife organisations to identify the 6 most important steps for restoring wildlife on your farm.

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6 Key Actions...

To help farmland wildlife the most, try to implement a range of advice from these key actions.

Existing Habitats	Field Boundaries	Wet Features
Habitats already established on the farm are often the most wildlife-rich. Looking after the existing features on the farm and managing them well should be the priority when providing space for wildlife.	Field boundaries perform important functions for the farm, but also provide valuable habitat for wildlife. Well managed boundary features can support a range of wildlife, as well as connecting habitats across the landscape.	Water is a crucial element for wildlife. With the right management wet habitats can provide some of the most wildlife-rich areas on farmland.
Get Advice >	Get Advice >	Get Advice >
Flower-rich Habitats	Seed-rich Habitats	Farmed Area
Many native flower-rich habitats depend on farming practices for survival, including rare arable species and the wildflower-rich grasslands which were once common places across the landscape.	Traditional agriculture provided seed-rich habitats throughout the year that wildlife evolved to exploit. Many birds became farmland specialists, relying on these habitats for food, especially through the winter.	Small towns in the management of the farmed area can deliver benefits to specific species or the overall farmed environment.
Get Advice >	Get Advice >	Get Advice >

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AGRICOLGY

- An independent knowledge platform** supporting all farmers and growers to transition to more sustainable and resilient farming systems.
- Free platform** set up in response to increasing challenges of declining soil fertility, climate change, declining biodiversity and the need to rethink the way we tend the land.

Agrologists provide leadership in environmental sustainability through their efforts in conservation,

- wetland protection
- land management techniques
- renewable resource management

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Agroforestry

Agroforestry combines trees and crops on the same land to produce both products while protecting and sustaining vital resources.

Unlike traditional forestry or agriculture, it emphasizes the interaction between components.

Research shows agroforestry is more productive, profitable, and sustainable than monocultures, with many proven benefits.

Temperate agroforestry is widely practiced globally, and its success depends on the integration of forest and agricultural elements and the careful selection of tree and crop combinations.

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AGRICULTURE & HORTICULTURE
DEVELOPMENT BOARD



A statutory levy board, funded by farmers, growers and others in the supply chain to help the industry succeed in a rapidly changing world.



Want to **create a world-class food** and farming industry, inspired by and competing with the best.



Research and knowledge exchange for farmers

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The Voluntary Initiative
Initiated 2001

Industry led programme.

Through schemes, tools and messages promote the responsible use of PPP through an IPM-based approach to sustainable agriculture.

Mission is to be the UK's primary delivery mechanism for promoting best practice in PPP use through enhanced adoption of Integrated Pest Management (IPM) as defined by the Sustainable Use Directive in order to protect water and the environment.

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growtrain
TRAINING FOR SUSTAINABLE FARMING

Farm business economics

- Understand the business opportunities and impacts of agri-environment schemes and wider funding options, including income vs management costs

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Farm business economics

Business audit – resources – natural capital

Adding value to the business

Opportunities - Diversification – Alternative Markets

ELMS

- BASIC Payment Scheme – delinked payments
- Sustainable Farming Incentives
- Countryside Stewardship
- Landscape Recovery
- Capital Loans / Grants

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Farm business economics

Gross Margins = Yield / Price less **direct** cost – doesn't include overheads

Net Margins (Net Profit) = Yield / Price less all cost including depreciation

Direct costs: seed, fertiliser, direct labour, soil admenments

Indirect costs / overheads: = Cost not directly allocated to a product sale, utilities, management

Capital cost: One time expenditure written off over a period of time

Depreciation: The reduction in value of a capital item over a number of years

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Digital mapping

Understand ways to spatially map land management interventions.



- **Computer-assisted** production of digital maps of soil types and soil properties.
- Soil mapping, involves the creation and population of spatial soil information by the use of field and laboratory observational methods coupled with spatial and non-spatial soil inference systems.
- The international Working Group on Digital Soil Mapping defines digital soil mapping as:

"the creation and the population of a geographically referenced soil databases generated at a given resolution by using field and laboratory observation methods coupled with environmental data through quantitative relationships."

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Geographic Information System (GIS)



Optimizing fertilization: Productivity maps identify productive and low-productive areas for targeted nutrient application.

Detection of crop health issues: Vegetation indices reveal crop conditions, aiding in early detection of pests, diseases, and nutrient deficiencies.

Irrigation control: Index-based analysis identifies overly dry or waterlogged areas, enabling adjustments to minimize crop losses.

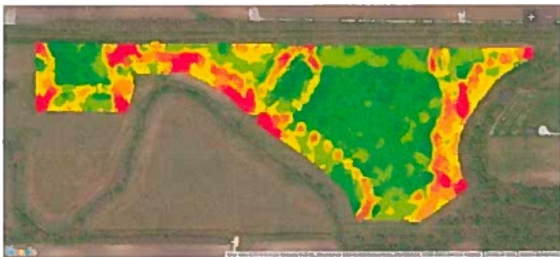
Simplified scouting: Task management system streamlines field visits, with satellite-based threat identification and offline inspection reporting..

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Yield maps- identify poor areas - could they be used for biodiversity or carbon or cultural or water?



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- Downforce Technologies is a pioneering leader in science-led, data-driven land management solutions focused on optimising soil health, soil organic carbon levels, and biodiversity.
- Over 30% of the world's soil already degraded, urgent action is needed to address this pressing global challenge.



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Platform Benefits



Fully Remote
Access a high-resolution view of your data from your phone, anywhere in the world.



Views At Any Scale
Analyse individual farms, large landscapes and entire landscapes, globally.



Historical Analysis
Access 4+ years of historical data, every 10 days or 5m grid resolution.



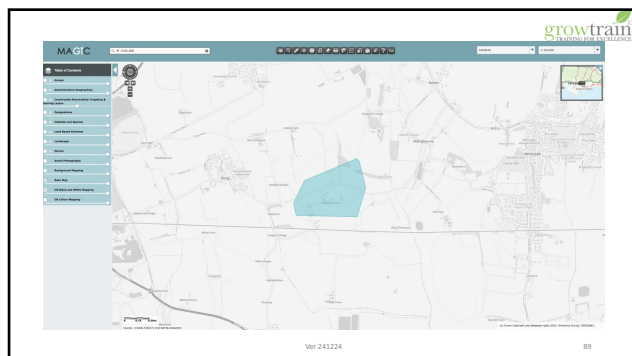
Accurate
Utilise verified, reliable science-based data to identify, measure and track with unprecedented precision.



Cost-Effective
Benefits from continuous SOC measurement for every field, every year, saving significant costs on standard soil testing.



Any Use
Measure and report on any land use and crop type in any region.



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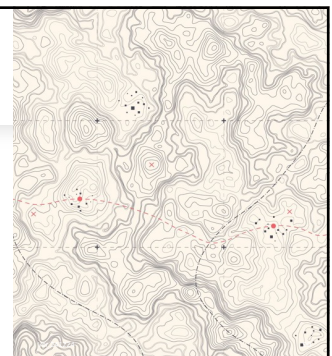
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Digital mapping

MAGIC maps data layers:

- Soil Type
- Agri Schemes in place
- SSSI
- And many more !



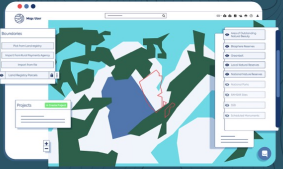
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LandApp

INTUITIVE
MAPPING,
COLLABORATION
AND INSIGHT

Streamline your workflows with The Land App's state-of-the-art features.

- Effortless mapping technology
- Instant data reports
- Fast growing library of visual data layers
- Insightful land and habitat metrics
- Official government templates
- Authoritative datasets on-demand (OS MasterMap)



growtrain

TRAINING FOR EXCELLENCE

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