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General Information

BASIS Quality of Soils Level 6

There are 7 modules in the syllabus BASIS Quality of Soils – Level 6

INTRODUCTION

Building on the success of existing BASIS modules, the 'Quality of soils' module aims to give farmers, growers and advisers further insight into how to make farming and production systems more resilient through an increased understanding of how soil functions as an 'ecosystem'. One which can function optimally to produce food, fibre and biofuels.

Over the past sixty years or so, some the characteristics of farmed soils have altered as a result of changing farming systems driven by agricultural policy. Where soil is not at the core of farm management, it can be at risk from erosion and loss of structure and biology. Restoring areas at risk is a priority as is protecting all soils to optimise their long-term viability and production potential.

Farming and soils are facing unprecedented pressures, as a result of climate change, population growth; highly competitive commodity markets; pesticide resistance e.g. in black-grass; pressure on input use, as a result of the need to balance production and environmental targets. A good quality soil is essential for future crop and livestock production, farm profitability and the long-term sustainability of both farming and our environment.

A fully functioning soil with appropriate structure, chemistry and biology enables the soil and plants to interact symbiotically and become resilient to traffic and weather extremes. Understanding the relative improvements that can be made to each soil within a farming system is key to achieving a soil which is as near as possible to its optimum conditions for agricultural practices.

Life within the soil is hidden and so often suffers from being 'out of sight, out of mind' (EU Atlas Soil Biodiversity). With around 75% of terrestrial wildlife living in the soil, a thriving soil food web is vital and underpins the success of both farming systems and their associated farmland wildlife.

This course will enable farmers, growers and advisers to understand the relationship between the physical structure, biology and the chemical processes that contribute to a healthy soil. It will demonstrate the interrelationships between these aspects of soil and how it is a dynamic and subtly changing ecosystem which can be influenced, both positively and negatively, by farming practices.

Indeed, land managers who focus more on soil structure, monitoring, maintaining and enhancing organic matter, integrating cover crops and green manures, using compost and farmyard manure and altering grazing strategies (for example) are recognising that the benefits can be seen fairly rapidly.

This course aims to help improve the knowledge and skills necessary to manage soils for the benefit of farms as well as for the long-term sustainability of natural resources.

WHISTLE BLOWING POLICY

BASIS Registration Ltd is committed to the highest standards of openness and accountability. Therefore, we expect employees, candidates and others who work with BASIS who have serious concerns about any aspect of our work voice those concerns.

To this effect BASIS has a Whistle Blowing Policy. This procedure is designed to allow concerns of a public interest kind within BASIS to be raised, investigated and where appropriate, acted upon. Complaints may be made by or about any member of staff, candidates or those contracted to provide services to BASIS.

To view the full Whistle Blowing Policy go to:
http://www.basis-reg.co.uk/documents/BASIS-whistle-blowing-policy.pdf

DYSLEXIA POLICY

BASIS Registration Ltd allows students diagnosed with Dyslexia to request special examination arrangements. Proof of dyslexia is required a **minimum of 4 weeks** before the exam date so that BASIS can provide special examination arrangements if required.

For a full copy of our Dyslexia Policy please go to:
https://basis-reg.co.uk/documents/Dyslexia-Policy.pdf

COMPLAINTS POLICY

For a full copy of our Complaints Policy please go to:
https://www.basis-reg.co.uk/documents/Complaints-Procedures.pdf

COURSE DELIVERY

The taught element of the course will normally be delivered over 5 days short course, plus 2.5 hours for the examination.

Training Providers will support candidates for Quality of Soils by providing a pre-prepared study pack and a list of essential reading. These will cover all elements of the module and include a study guide.

This is supplemented by tuition which has been developed to address the requirements of the module. Tuition will be in the form of small group delivery and will include field classes and workshops, where appropriate.

Students will be provided with pre-course reading in advance of the taught elements of the course and will be required to complete this, so they are familiar with the key aspects of the syllabus. In addition to pre-course reading, students will also be provided with a set of fundamental key questions that are specific to the module. The key questions will be directly related to the module outcomes and will require students to draw and reflect upon their existing professional and field experience and contextualise this within their impending course of study. Students will be required to provide a response to the key questions prior to the start of the taught course and group discussion of answer themes with module tutors will take place during the course delivery.

EXAMINATION

The candidates have to pass two assessment elements to meet the module outcomes, marked by BASIS. Pass mark 70%.

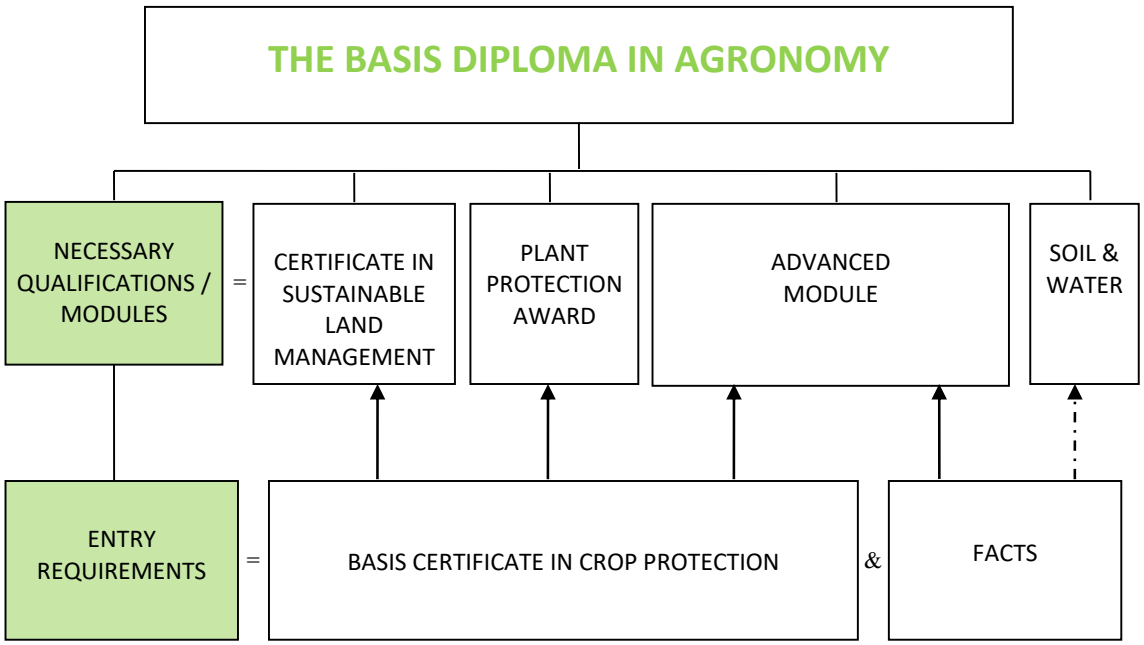
- Time constrained online written examination 6 from 10 discursive questions.
- VIVA examination assessing the ability of the candidates to apply their knowledge and understanding within the practical context. VIVAs are conducted by experienced BASIS examiners and must be completed satisfactorily.

Marks from each component of assessment are calculated to provide a single mark, recorded as either pass or fail and candidates will be required to pass all elements in order to successfully pass the module. The exam duration is 2.5 hours, breakdown below:

3 out of 5 Short Answer Questions (80 Minutes)
15 Minute break
3 out of 5 Short Answer Questions (80 Minutes)

THE BASIS DIPLOMA IN AGRONOMY

The breadth and scope of knowledge needed for crop protection sales and advice grows every year. New products, new techniques and the way that crop protection fits with other farm and crop management activities all add to the skills needed by those involved in sales and advice for Crop Protection. To cover the range of factors involved, the new BASIS Diploma in Agronomy, as set out below, gives a comprehensive training and qualification framework for those involved in on-farm advice and sales.



TOPICS COVERED

ADVANCED MODULE	Weed, Pest & Disease Control, Crop Protection Programmes, Marketing, Food Industries, Crop Assurance
CERTIFICATE IN SUSTAINABLE LAND MANAGEMENT	Environment, Biodiversity, EIS's, IFM, Climate Change
PLANT PROTECTION AWARD (PPA)	Systems & Society, Formulation, Mode of Action, Application, Health & Safety
SOIL & WATER MANAGEMENT	Cultivation Types and Properties, Cropping Systems, Water Quality, Drainage, Pollution / Waste, Plant Nutrition

For the PPA and the Advanced Crop Module the prior achievement (by examination, exemption or validated certificate) of the BASIS Certificate in Crop Protection is an entry requirement. For the Advanced Waste to Land and Quality of Soils courses the prior achievement of the FACTS qualification is required.

The FACTS qualification is a requirement for successful completion of the BASIS Diploma and strongly recommended for those wishing to train for the Soil & Water Management Certificate.

It is **strongly** recommended that candidates should have had at least two years experience of on-farm practical agronomy before attempting any of the modules which contribute towards the BASIS Diploma in Agronomy, but in particular before taking the Plant Protection Award.

BASIS CPD points are available for training and certification in all modules of the BASIS Diploma in Agronomy.

The accreditation process for our qualifications has enabled BASIS to demonstrate a high standard of training and certification for our BASIS courses. The BASIS Diploma comprises a number of modules and 6 are required to complete the qualification.

A further consequence of accreditation by Harper Adams University and the Higher Education qualifications framework has been the development by Harper Adams University of a Graduate Diploma in Agronomy with Environmental Management.

This is a 120 credit graduate level qualification.

BASIS courses have all been awarded a number of credits based on the time spent on the course (Targeted Learning Hours). This is a recognised formula including face to face tuition time, research, reading and experiential learning. The credits are awarded at a level that reflects the intensity / difficulty of the learning materials, for example A-level equivalent or 1st, 2nd or final year honours degree etc.

The qualifying BASIS courses with credits and levels awarded are shown below:

FACTS	
Credit Value	15
Level	5 - Intermediate

SOIL & WATER MANAGEMENT	
Credit Value	15
Level	6 - Honours

BASIS CROP PROTECTION	
Credit Value	30
Level	6 - Honours

BASIS PLANT PROTECTION AWARD	
Credit Value	15
Level	6 - Honours

BASIS ADVANCED MODULES	
Credit Value	15
Level	6 - Honours

CERTIFICATE IN SUSTAINABLE LAND MANAGEMENT	
Credit Value	15
Level	5 - Intermediate

Intermediate = 2nd or 3rd year of university degree qualification.

Honours level – final year university degree.

Eg. FACTS 15 credits = 150 hours notional teaching time

The six modules required for the BASIS Diploma add up to 105 credits. In order to qualify for the Harper Adams University Graduate Diploma in Agronomy with Environmental Management, candidates will need to accumulate 120 credits (ie One extra 15 credit module in addition to the BASIS Diploma). This can be any of the Advanced Modules, including Waste to Land.

Further details of the BASIS Diploma in Agronomy can be obtained from the BASIS office or by e-mail to training.courses@basis-reg.co.uk.

MODULE 1 – INTRODUCTION TO SOIL

AIMS:

To raise the level of knowledge regarding soil genesis, characteristics and functions. To familiarise participants with the terminology particular to soil science; knowledge which is necessary for the rest of the course. Finally, to introduce the concept of the quality of soils.

MODULE CONTENT:

1. **The characteristics of soils:**
   - Definition of soils from various perspectives, e.g. Agricultural, Environmental, Geological, etc.;
   - Soils as a definite structure, linking inorganic non-living matter and the organic, living world. The characteristics of good quality soils;
   - Origins and spatial variability of the UK soils;
   - Main soil types in the UK.

1. **The soil ecosystem functions:**
   - Support and anchorage;
   - Nutrition and nutrient cycling;
   - Natural recycling;
   - Water absorption, retention and loss;
   - Air exchange and climate regulation;
   - Habitat for living organisms.

2. **Specific terminology and methods used in soil analysis:**
   - Soil profile & soil horizon (organic layer (O), topsoil (A), subsoil (B), the substrate (C), rocks (R), etc.);
   - Main constituents of soil: solids (mineral and organic), liquids, gases;
   - Soil characteristics: physical, chemical, biological:
     - Physical characteristics (thickness, colour, texture, structure, consistency, porosity, the content of carbonates, etc.);
     - Chemical characteristics (nutrients including micronutrients; pollutants; pH; SOC);
     - Biological characteristics (main biological components (mammals; worms; invertebrates; microorganisms – fungi and bacteria; plant roots).

LEARNING OUTCOMES:

Candidates should be able to:

a) know the typical characteristics of good quality of soils, soils as a living entity and the concept of soil health;
b) describe and comment on the most important soil functions;

5% of total time

MODULE 2 – THE PHYSICAL AND MECHANICAL PROPERTIES OF SOIL WATER AND AIR IN SOIL

AIMS:

To explore all the physical characteristics of the soil. To enable the development of in-depth knowledge and understanding of the interconnection of all physical factors and the ability to identify and describe the ideal soil conditions for plant growth and sustainable agricultural practices.

MODULE CONTENT:

1. **Soil texture:**
   - Main soil mineral fractions and their characteristics (clay, silt, sand);
   - Soil textural classes; composition and properties; the soil texture triangle;
   - Importance of soil texture and impact on soil porosity, soil structure, water and air exchange and soil biota.

2. **Soil structure:**
   - Main types of soil structural units;
   - Soil structuring process and soil aggregates;
   - Aggregate stability, degradation and soil restructuring; the importance of soil biology to structure.

2. **Other soil physical properties and factors influencing them:**
   - Soil density;
   - Soil porosity (pore size);
   - Soil compactability;
   - Tilth;
   - Physical properties of good soil structure.

3. **Water in the soil:**
   - Water retention and factors that influence the water-holding capacity;
   - Soil capillarity (cohesion, adhesion and surface tension);
   - Water availability;
   - Infiltration;
   - Soil hygroscopicity; Wilting point; Field capacity;
   - The consistency of soil as Cemented, Friable, Plastic & Liquid limits;
   - Drainage and irrigation.

4. **Gases in the soil:**
   - Importance of soil aeration;
   - Soil gaseous capacity and factors that determine it.

LEARNING OUTCOMES:

Candidates should be able to:

a) demonstrate a systematic understanding of key factors determining soil texture and soil structure (knowledge of the soil texture triangle);
b) evaluate the importance of soil physical properties for plant growth;
c) display the capacity to make the connection between the soil physics and morphological properties of soil, water and air;
d) describe how soil structure can affect erosion risk, root access, and water infiltration, retention and availability;
e) describe how specific agricultural practices can influence the physical properties of soil and vice versa;
f) state, evaluate and justify their individual ideas and opinions regarding the influence of various agricultural practices on physical properties of the soil.

15% of total time

MODULE 3 – CHEMICAL PROPERTIES OF SOIL

AIMS:

To explore the chemical properties of the soil, including the solution and investigate the nature of electrostatic forces in the soil. Assess plant nutrient requirements and availability.

MODULE CONTENT:

1. **Electrostatic properties of soil**
   - Cations and Cation Exchange Capacity (CEC), mechanism and importance;
   - Anions and Anion Exchange Capacity (AEC).

2. **Soil pH:**
   - pH; pH scale, importance;
   - The role of acidity and alkalinity in nutrient availability and uptake;
   - Crop pH requirements; soil pH manipulation and liming (materials used and calculation of lime requirement).

3. **Plant nutrients and soil elements important for farming:**
   - Macronutrients (N, P, K, Mg, S, Ca, Na) and their importance;
   - Plant and animal micronutrients (Fe, Cl, Mn, Zn, B, Cu, Se, Mo, Si, Co, Ni) and their importance;
   - Crop nutrient requirements, excesses and deficiencies;
   - Soil fertility and productivity.

LEARNING OUTCOMES:

Candidates should be able to:

a) comprehend the basic mechanisms responsible for soil cation and anion exchange and critically evaluate their importance;
b) describe the effect of pH on plant nutrient uptake
c) be able to distinguish between Macro and Micronutrients and crop requirements;
d) describe how soil chemical properties and nutrient composition can be used to describe soil aspects like soil fertility, productivity and healthy soil;

10% of total time

MODULE 4 – SOIL ORGANIC MATTER. CARBON CYCLE

AIMS:

To develop an understanding of the importance of soil organic matter. Describe the cycle of carbon-based compounds in soil.

MODULE CONTENT:

1. **Organic constituents of the soil:**
   - Soil biodiversity: Microflora and Microfauna; Mesofauna, Macrofauna and plants roots;
   - Soil non-living organic matter: detritus and humus.

2. **Detritus:**
   - The chemical composition of detritus (fresh organic matter): proteins, carbohydrates, lignin, cellulose, hemicellulose, etc.;
   - Elemental composition of soil organic matter (carbon, nitrogen and phosphorus);
   - Fresh organic matter, importance and resistance to decomposition.

3. **Humus:**
   - Humus and humic substances;
   - Humic substances including plant hormones and their influence on soil fertility, plant growth and plant development;

4. **Importance of Soil Organic Matter and Carbon cycle:**
   - Soil organic matter content and influence on soil properties, the C:N ratio; organic soils compared to mineral soils;
   - Natural factors influencing the level of organic matter in soil;
   - Organic matter as a relative index of soil health;
   - Research and evidence-based practices that impact on the level of soil organic matter (e.g. tillage, green manure, cover crops, composts, grassland breaks);
   - The carbon cycle.

LEARNING OUTCOMES:

Candidates should be able to:

a) describe organic constituents of soil;
b) have knowledge of the major types of non-living organic matter and be able to specify factors that influence the detritus make-up and resistance to decomposition;
c) be able to comment on the relationship between soil organic matter content and soil properties, including water retention capacity;
d) be aware of the constitutive elements of humus;
e) discuss and debate various ways of manipulating the content and quality of soil organic matter, based on the knowledge from this and other modules;
f) understand the processes that lead to soil organic matter decrease and measures that help to maintain or increase the level of organic matter in the soil for each of the main UK farming systems.

15% of total time

MODULE 5 – SOIL MICROBIOTA. RHIZOSPHERE. NITROGEN AND PHOSPHORUS CYCLES

AIMS:

To familiarise participants with the most important taxonomic groups of living organisms in the soil. Have a clear understanding of the structure, properties and requirements of major taxonomic groups of soil microbiota and understand their position in the soil hierarchy and food chain, at the soil level.

MODULE CONTENT:

1. **Soil Microbiota. Microflora:**
   - Importance of bacteria for soil and plant growth. Symbiosis. Bacteria as phytopathogens;
   - Roles of fungi in soil; saprophytes, mycorrhiza, phytopathogens and glomalin production;
   - Algae and cyanobacteria. Importance of algae and cyanobacteria for soil and plants.

2. **Soil Microbiota. Microfauna:**
   - Protozoans and their role in the soil system and nutrient cycling. Importance of Protozoa as a biological measure in controlling plant pathogens;
   - Nematodes. Type of nematodes according to what they eat; roles of nematodes' in soil biocenosis. Free-living nematodes and parasitic nematodes (direct feeding and virus vectors). Nematodes as biological control agents for plant pests.

3. **Nitrogen cycle:**
   - Nitrogen fixation, assimilation, ammonification, nitrification, denitrification;
   - Biotic nitrogen fixation and assimilation: free-living bacteria (aerobic and anaerobic) and symbiotic nitrogen-fixing microorganisms;
   - Symbiotic relationships, mechanisms and importance: Associative, Rhizobium – Leguminous,
   - Ammonification. Description of the process, ammonium and its importance. Examples of microbial species that participate at all stages of the process;
   - Nitrification. Description of the process and importance. The relationship between soil fertility and the number of nitrification bacteria;
   - Denitrification. Description of the process and its importance. The relationship between soil water content and denitrification.

4. **Phosphorus cycle:**
   - Phosphorus importance; forms of phosphorus in soil;
   - P-solubilising microorganisms; mycorrhizae. Plant uptake;
   - Phosphorus and water quality; Eutrophication.

5. **The Rhizosphere:**
   - Definition of rhizosphere; the rhizosphere zones and factors that influence rhizosphere development. Plant nutrient uptake process;
   - Functions of the rhizosphere. Allelopathy and allelochemicals;
   - Farm practices and their influence on the rhizosphere.

6. **Soil Microbiota interaction:**
   - The position of the main classes of soil microbiota in the soil food web;
   - Trophic levels and microbiota functional classes (producers, ecosystem engineers (fixers and decomposers), pathogens and pathogen controllers, parasites, microbivores, root-feeders, dispersers, shredders).

LEARNING OUTCOMES:

Candidates should be able to:

a) demonstrate knowledge of soil biota and be able to describe the common characteristics of the organisms from each group;
b) understand the soil food web;
c) describe the nitrogen cycle and understand the importance of this process;
d) demonstrate an understanding of symbiosis (types of symbiosis) and mycorrhizae and be able to use this knowledge to evaluate the importance and contribution of this process to soil function;
e) describe the key aspects of the phosphorus cycle;
f) outline plant nutrient uptake process;
g) describe the importance of microorganisms in soil fertility, productivity, structure, properties and overall good soil quality.

20% of total time

MODULE 6 – SOIL MESOBIOTA AND MACROBIOTA

AIMS:

To explore the major constituents of soil macrobiota and their importance to soil processes and properties.
To outline the significance of the flora for soil biodiversity and soil function.

MODULE CONTENT:

1. **Mesobiota:**
   - Tardigrades, springtails and mites and their role in biogenesis.

2. **Biota:**
   - Potworms and their importance in detritus transformation; indicators of soil ecological condition.
   - Centipedes, millipedes, pseudocentipedes and thrips and their role in the soil ecosystem.
   - Earthworms and their importance in regulating soil quality; types of earthworms and their impact on key soil biological processes (e.g. aggregation, decomposition, mineralisation, etc.)
   - Ground beetles and their role in the upper soil food web.

3. **Soil meso and macrobiota interaction:**
   - Plant root systems as an important part of soil biodiversity;
   - Trophic levels of the soil meso and macrofauna and their interrelation;
   - Functional classes of soil fauna.

LEARNING OUTCOMES:

Candidates should be able to:

a) know the definition of macrobiota and the taxonomic classes of the most important organisms to soil biogenesis;
b) demonstrate detailed knowledge of the importance of earthworms to soil formation, fertility, productivity and health;
c) complete the soil food web combining micro, meso and macrobiota and describe the interactions between soil organisms.

15% of total time

MODULE 7 – SOIL, A NON-RENEWABLE RESOURCE. RISKS TO SOIL IN THE UK SOIL QUALITY REMEDIATION PRACTICES. SOIL TESTING METHODS

AIMS:

To raise awareness of the risks to the quality of soils in the UK. To develop recognition of the symptoms of the main soil "degradation pressure" and to be familiar with the practices designed to conserve and restore soils.
To familiarise participants with the UK Soil Thematic Strategies; National bodies and organisations responsible for promoting and policing aspects connected to conservation and improving soils.

MODULE CONTENT:

1. **Main factors affecting the quality of soils:**
   - Major threats and challenges to soil in the UK and global context e.g. Climate change, drought, floods, salinization and desertification;
   - Farming practices: land use (arable/grassland), cultivations, nutrient application, vehicle traffic, grazing;
   - Topsoil erosion;
   - Soil compaction;
   - Soil acidification;
   - Poor land drainage;
   - Surface capping and soil slumping;
   - Declining soil organic matter content;
   - Pollutants, i.e. heavy metals, PCBs, etc. contamination;
   - Salt-affected soils;
   - Soil biodiversity decline.

2. **Assessing the quality of soil health and biodiversity:**
   - Appropriate soil quality properties for different farming systems;
   - On farm techniques for basic assessments of soil properties and soil function;
   - Professional soil testing services available in the UK, including key tests for soil N and P;
   - Interpretation of soil analysis results;
   - The meaning and use of physical and chemical analyses of soil;
   - Soil microbiota measurements: Microscopic observations: counting microorganisms; Functional tests: respiration, enzyme analysis, carbon profiles, protein analyses and Taxonomic tests: DNA and RNA fingerprinting techniques, etc.;
   - Soil microbiota and macrobiota analyses: taxonomic identification of the macro-organisms; earthworm sampling and counting; a sampling of nematodes, mites and other micro-arthropods, etc.;
   - Simple on-farm tests such as VESS and the importance of looking at soils ("Dig a hole").

3. **Practices designed to maintain and remediate soils:**
   - Conservation Agriculture principles;
   - Minimum tillage, conservation tillage, location-specific tillage, strip-till and no-till;
   - Soil compaction remediation: subsoiling, mole drainage etc.
   - Cover crops;
   - Mulching;
   - Crop rotation;
   - Green manures;
   - Multispecies ley;
   - Incorporating bulky organic manures, composts, farmyard manure (FYM), plant wastes/crop residues and other materials;
   - Leys and grazing;
   - Adequate drainage;
   - Appropriate use of fertilisers and plant protection products and potential effects on soil biology;
   - Use of biostimulants;
   - Protective landscape elements: windbreaks, waterways with permanent grass, ridges, hedgerows, agroforestry, etc.;
   - Environmental measures e.g. grass strips; watercourse fencing; winter cover crops; legume crops and legume rich mixtures in rotations, etc.;

4. **Regulatory frameworks and UK measures, stewardship and initiatives designed to protect soil:**
   - UK regulatory bodies and policies designed to protect soil;
   - Nitrate Vulnerable Zone regulations;
   - Environment Agency, DEFRA, Natural England, the international initiative "4 per 1000" and other organisations; the role they play in protecting soil and improving soils;

LEARNING OUTCOMES:

Candidates should be able to:

a) describe in detail the main threats to the quality of soils in the UK;
b) discuss the causes of various soil diseases and suggest remedial measures to restore soil function;
c) demonstrate a working knowledge of all available tools for assessment of soil biology and biodiversity assessments;
d) describe and evaluate key models of short-term and long-term methods of soil restoration;
e) describe the UK regulatory framework and accreditation schemes that relate to the soil.

20% of total time

ESSENTIAL READING:

Note that the list is correct at time of approval but subject to regular updates:

The following AHDB documents are in the GREAT soils section of the web site https://ahdb.org.uk/greatsoils

AHDB, 2015. *Opportunities for cover crops in conventional arable rotations*. Link here
AHDB, 2016. *An introduction to soil biology*.
AHDB, 2016. *Improving soils for Better Returns*.
AHDB, 2017. *Compost is good news for soil health.*
AHDB, 2018. *Healthy grassland soils Four quick steps to assess soil structure.*
AHDB, 2018. *Healthy grassland soils pocketbook*.
AHDB, 2018. *How to count earthworms*.
AHDB, 2018. *Soil assessment methods factsheet*.
AHDB, 2018. *Soil management for horticulture*.
AHDB, 2018. *Soil pH - how to measure and manage it based on an understanding of soil texture.*
AHDB 2020. *Principles of soil management.*

Environment Agency *Think Soils*

Championing the Farmed Environment (CFE), 2016. Soil management for your farm business Link here

DEFRA, 2009. *Protecting our Water, Soil and Air, Code of Good Agricultural Practice for Farmers, Growers and Land Managers*. Link www.gov.uk/government/publications/protecting-our-water-soil-and-air

DEFRA, 2011. *Safeguarding our Soils - A Strategy for England*. Link www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england

Gardi, C., Jeffery, S., 2009. *Soil Biodiviersity.* European Commission, Publications Office of the European Union, Luxembourg. Link here

Gregory, P.J. & Nortcliff, S. ed. 2013. *Soil conditions and plant growth*. Chichester: Wiley-Blackwell.
E*uropean Atlas of Soil Biodiversity*. European Commission, Publications Office of the European Union, Luxembourg. 2010 Link here

Vidacycle / Sectormentor for Soils, 2018. Know Your Soils #1 to #10, Link fore video resource here

There is further information at the *Agricology, Resource library* - *www.agricology.co.uk/resources*

RECOMMENDED READING:

Note that the list is correct at time of approval but subject to regular updates:

AHDB, 2017. *Good soil management practice – a guide for outdoor pig keepers*. https://ahdb.org.uk/knowledge-library/good-soil-management-practice-for-outside-pig-keepers

AHDB, 2020. *Field drainage guide.* Link https://ahdb.org.uk/drainage

Davies, D.B. Eagle, D.J., Finney, J.B. 2001. *Soil (Resource Management).* Tonbridge: Farming Press.

DEFRA, 2018. *Cross compliance*. https://www.gov.uk/government/collections/cross-compliance

Global Soil Biodiversity Atlas. European Commission, Publications Office of the European Union, Luxembourg. 2016. https://esdac.jrc.ec.europa.eu/content/global-soil-biodiversity-atlas

Blum, Schad and Nortcliff *Essentials of Soil Science*, published by Borntraeger Science Publishers, 2018.

Championing the Farmed Environment Website *www.cfeonline.org.uk/home/*

Joint Nature Conservation Committee Website - *jncc.defra.gov.uk/Default.aspx*

Natural England Website - *www.naturalengland.org.uk*

The Voluntary Initiative Website - *www.voluntaryinitiative.org.uk/en/home*

BASIS APPROVED TRAINERS

The following Colleges, Trainers and Training Providers are successfully running the Quality of Soils Course and Exam and have been accepted as BASIS Approved Trainers for Quality of Soils.

Chelmsford & West Essex Training
2 Salisbury Cottages, Maldon Rd
Hatfield Peverel
CHELMSFORD
Essex
CM3 2HS

Contact: Debbie Wedge
Tel: 01245 381193
Email: debbiewedge@cwetg.org
Web: www.cwetg.org

David Godsmark
Swallowfield
Eastergate Lane
Eastergate
CHICHESTER
West Sussex P020 6SJ

Contact: David Godsmark
Tel: 01243 543834
email: david@godsmark.com
Trainer: David Godsmark

DJL Agronomics
Highgrove House
12 Cassbrook Drive
Fulstow
LOUTH

Contact: Dr Jim Lewis
Tel: 07831 120363
Email: djlagronomics@gmail.com
Trainer: Dr Jim Lewis
Web: www.djlag.co.uk

Earthcare Technical Ltd
Head Office
Manor Farm
Chalton
WATERLOOVILLE
Hampshire PO8 0BG

Contact: Audrey Litterick
Tel: 02392 290488
Email: audrey@earthcaretechnical.co.uk
Trainer: Audrey Litterick
Web: www.earthcaretechnical.co.uk

GrowTrain Ltd
8b Woodhorn Business Centre
Woodhorn Lane
Oving
CHICHESTER
West Sussex PO20 2BX

Contact: Graham Bryant
Tel: 01243 216278
Email: courses@growtrain.co.uk
Trainer: Graham Bryant
Web: www.growtrain.co.uk

Harper Adams University
Edgmond
NEWPORT
Shropshire
TF10 8NB

Contact: Paul Lewis
Tel: 01952 815367
Email: plewis@harper-adams.ac.uk
Trainer: Paul Lewis
Web: www.harper-adams.ac.uk

Susie Holmes Consulting Ltd
Bankside
Church Lane
Barnham
BOGNOR REGIS
West Sussex PO22 0DG

Contact: Susie Holmes
Tel: 01243 555592
Email: susieholmesconsulting@gmail.com
Trainer: Susie Holmes

University of Lincoln
Riseholme Park
LINCOLN
Lincolnshire
LN2 2LG
Web: www.lincoln.ac.uk/home/liat/shortcourses/

Contact: Iain Gould
Tel: 01522 835316
Email: igould@lincoln.ac.uk
Trainer: Iain Gould

The following Colleges, Trainers and Training Organisations have expressed an interest in running the Quality of Soils Course and Exam.

SRUC
Caledonian Marts
Stirling
STIRLING
FK7 7LS

Contact: Enquiries
Email: basis@sruc.ac.uk
Web: www.sac.co.uk

09 August 2023