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SOIL & WATER MANAGEMENT CERTIFICATE

Soil and water are two essential components of agriculture. The management of these two vital resources is at the centre of farming activity. Both elements are under pressure from modern living and current farming practice.

The development of roads, houses and other buildings has encroached on the countryside putting pressure on water / drainage management to reduce flooding risk. The changes to cropping practice with more cereals, more oil seed rape and more forage maize, as just 3 examples, have exerted their own dynamics on the way that soil and water are managed on the farm. The power and capability of today's tractors and equipment means that soil can be cultivated and seedbeds produced where previously it would have been difficult or impossible to do so. That facility is of enormous help to farmers, but it can also lead us away from the best practice of soil management.

The creation of larger fields over the last 50 years has also changed drainage patterns and in some cases filling in ditches and hedge removal have taken away natural borders to areas previously contoured to minimize erosion or recognise soil type changes. All these issues make the careful and considered use of the two vital resources of soil and water, a most important element of on-farm agronomy advice. As the agricultural industry moves to a more environmentally conscious approach, the focus of advice is changing and the "food at all costs" type of management will not be, in the current way of thinking, the way for the future.

The new BETA qualification was introduced in 2003 and ICM is a part of that qualification. A new revised Plant Protection Award was introduced in 2004. Hence the Soil and Water Management Certificate is now positioned alongside those two modules (BETA and Plant Protection Award) as part of the BASIS Diploma in Agronomy.

The primary content of the Soil & Water Management Certificate is concentrated on: - soil and air protection; cultivation techniques and systems; erosion risks; soil water, drainage and irrigation; plant nutrient and fertiliser planning; the use of bulky organic materials to enhance crop growth and their effects on diffuse pollution.

The syllabus contents above link together to form the composite soil and water management certificate.

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 to 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 from 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>

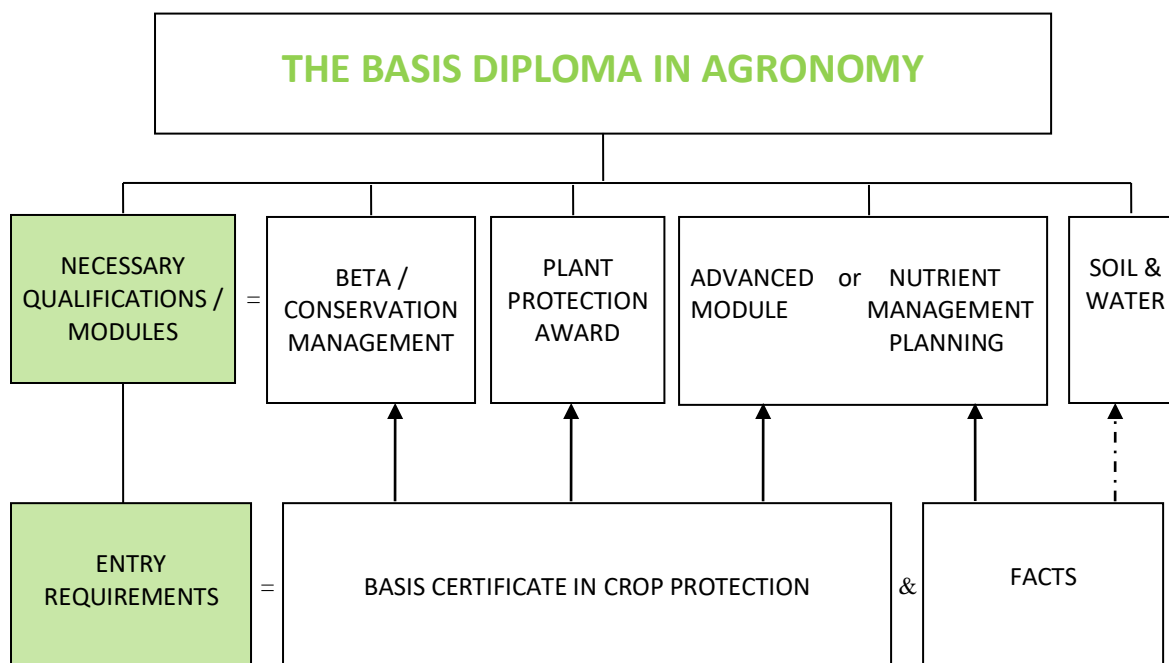
Complaints Policy

For a full copy of our Complaints Policy please go to:

<https://www.basis-reg.co.uk/documents/Complaints-Procedures.pdf>

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 / NUTRIENT MANAGEMENT PLANNING	Weed, Pest & Disease Control, Crop Protection Programmes, Marketing, Food Industries, Crop Assurance, Nutrient Management
BETA / CONSERVATION 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 Nutrient Management Planning, 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 / NUTRIENT MANAGEMENT PLANNING	
Credit Value	15
Level	6 - Honours

BETA / CONSERVATION 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 Nutrient Management Planning and 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

SOIL & WATER MANAGEMENT CERTIFICATE EXAMINATION GUIDELINES

EXAMINATION STRUCTURE

The examination is comprised of 4 elements

- Written - 20 multi-choice questions
- 3 short answer questions
- Completion of a Farm Management Plan incorporating drainage, plant nutrition, cultivation options, etc. and with assessment of erosion risk (soil texture, slope, rotation, cultivations) – open book exam.
- Viva - discussion about subjects from the Farm Management Plan completed for the examination.
- Viva - re in-field – discussion with a soil expert covering practical knowledge issues e.g. Soil profile, texture, drainage, use of manures, irrigation and others from within the syllabus.

EXAMINATION TIMING

08.15 am	Candidates gather at prior notified examination venue - enrol - Coffee Meet Independent BASIS appointed chairman & invigilator	
08.30 am	Examination begins and consists of - 20 multi-choice questions - 3 short answer questions	1 hour
09.30am	Coffee	
09.45am	Farm Management Plan - open book	2 hr 30 min
12.15pm	<u>Lunch</u>	
12.30pm	Viva examination – in-field Viva examination re project	15 - 20 min 15 - 20 min

The viva examinations will be scheduled through the afternoon as one to one discussions with the examiners for each viva.

FACTS QUALIFICATION

The Soil and Water Management Certificate course does not cover plant nutrition up to FACTS standard. It does cover some broader issues of fertiliser use and its impact on Soil and Water Management. Candidates needing in-depth knowledge and the capability to give advice on plant nutrition and fertilisers are strongly recommended to attend training and achieve the FACTS qualification.

Candidates who take the Soil and Water Management course / examination will find it helpful to be pre-qualified with the FACTS Certificate.

EXAMINERS

There will be two examiners at each examination session – neither of them related to the candidates or their tuition. They will undertake the viva examinations.

- an independent BASIS appointed chairman
- a professional soils expert
- an invigilator will be present for the written examination (this may be the BASIS Chairman)

If candidates are split into two groups they will be kept apart during the day to ensure no transfer of examination information (or mobile telephone call / texts!).

NUMBERS

Each Soil & Water Management examination day will examine a minimum of 7 candidates, with a preferred number of 10 candidates (maximum of 12 candidates).

VENUES

Examinations may be conducted at Colleges / Universities, business premises or other suitable locations as long as appropriate fields (or other capable facilities) are available on-site for the practical, separate rooms for the written and project viva examinations and a quiet environment are all available. Where possible, BASIS will endeavour to organise examinations within easy travelling distance for the majority of candidates.

TIMING

BASIS will be as flexible as possible to accommodate candidates / employers wishes. Usually, examinations cannot be conducted at particularly busy times of year, i.e. spring and autumn. Winter is preferred by many as a time when less field based activity is happening.

BOOKING AND EXAMINATION

Please contact the training department on 01335 340856 or 01335 343945 or by email to training.courses@basis-reg.co.uk. Please allow at least 8 weeks notice in advance of an examination request date.

OBJECTIVE SYLLABUS

MODULE 1 - SOIL AND AIR PROTECTION

1.1 Competence

Candidates will know the principles governing the maintenance of soil organic matter content, the maintenance of good soil structure and methods for the prevention of erosion by water and air. They must have knowledge of the legal and quasi legal requirements for the protection of soil and air and the maintenance of soil health and clean air.

1.2 Performance Criteria

Candidates must:

- Be conversant with the Defra Code of Good Agricultural Practice (Protecting our Water, Soil and Air)*.
- Know the soil related aspects of 'cross compliance' within the framework of the Single Farm Payment.
- Be able to write about and / or discuss soil drainage issues.
- Demonstrate a good knowledge of methods used to reduce the risk of soil erosion by water and wind.
- Be conversant with good livestock husbandry practice and its importance in Soil and Water Management.

1.3 Essential Knowledge and Skills

- Be able to texture soils as per the details given in the Defra booklets 'A Field Guide for an Erosion Risk Assessment for Farmers and Consultants' (PB4092) and 'Erosion and Controlling Soil Erosion' (PB4093)
- Be able to explain how erosion control methods work and the importance of field history
- Understand the reasoning behind soil related 'cross compliance' requirements appropriate to the UK region they work in
- Be conversant with agricultural / horticultural aspects of soil drainage and compaction management.
- Be able to explain Good Agricultural and Environmental Conditions (GAEC's) and know the relevant Statutory Management Requirements (SMR's)
- Know the different methods of soil cultivation and the importance of each.
- Know the problems caused by soil compaction and how to minimise / alleviate.
- The reasons why soil material should not be allowed to enter the aquatic environment
- Know the reasons why topsoil should not be removed

- How to increase soil organic matter levels to improve soil structural stability using cropping and organic manures
- Know the importance of crop rotations and crop selection linked to erosion and run off risk
- Know the place for and the role of livestock in the best practice of Soil and Water Management
- Be conversant with the protection of river banks from erosion
- Understand the pathways by which soil can reach watercourses (e.g. roads / ditches etc.)

* For Scotland the Scottish Executive Code of Good Agricultural Practice (PEPFAA) for farm soils

* For Wales the Cross Compliance Soil requirements

MODULE 2 - CULTIVATION TECHNIQUES AND SYSTEMS

2.1 Competence

Candidates must have a good understanding of the mechanics, economics and environmental aspects of cultivation

2.2 Performance Criteria

Candidates must be able to:

- Identify different soils and describe how their physical properties influence soil/plant/water relationships.
- Identify practical field management problems.
- Explain how the basic implement geometry affects the performance of tillage tools.
- Choose the most appropriate tillage systems for various cropping/weather/soil scenarios.
- Be aware of the costs of various field operations.
- Plan field mechanisation strategies to minimise soil compaction and/or alleviate its effects.

2.3 Essential Knowledge and Skills

- Assess soil physical properties – texture and structure.
- Techniques for field and laboratory examination of soil properties. The recognition of the effect (both positive and negative) caused by farming practices by both field and laboratory examination of soil.
- Be able to explain the effects of implement geometry on soil structure and soil implement forces. The selection of tillage equipment required to produce the soil conditions required for a given crop type.
- Understand the influence of cropping system, rotation, topography and seasonal considerations on the choice of tillage regime adopted.
- How to assess soil workability and the number of available working days at critical periods.
- Be able to recognise soil compaction damage, how it occurs and its effects on soil properties and crop performance. Know the difference between ‘compaction’ and ‘consolidation’.
- Describe the effects of wings and leading tines, tine spacing and tine depth on the cultivation process.
- Know the different types of cultivation machinery and role and place for each.

- Know methods used to minimise and alleviate soil compaction and improve traction: improved wheel and tyre systems, field operational practices.
- Be aware of how cultivation may contribute to or reduce diffuse pollution.
- Be conversant with the varying economics of using different cultivation techniques and equipment.

MODULE 3 - SOIL WATER, DRAINAGE AND IRRIGATION

3.1 Competence

Candidates must understand the relationships between soil and water management to enable best use of land and the minimization of diffuse pollution.

3.2 Performance Criteria

Candidates must be able to:

- Recognize the basic relationships between soils and water and describe the effects of soil and water management practices in controlling pollutant loss.
- Plan field management systems to effectively control drainage imperfections.
- Plan controls for diffuse and point source pollution to water meeting the current, and potential, legislation and advisory requirements.
- Understand the implications of the Groundwater, Nitrates and Water Framework Directives.

3.3 Essential Knowledge and Skills

- Soil water properties - water status, hydraulic conductivity, moisture holding capacity and infiltration.
- Methods of field drainage, including the use of secondary treatments, and their impact on water tables, hydraulic conductivity, runoff and through flow pollution.
- The objectives for water quality.
- Methods of irrigation and the planning of irrigation applications to obtain best crop yield at least environmental damage.
- Use of irrigation to improve crop quality
- How to reduce diffuse pollution of water by cultural methods appropriate to varied soil types and cropping systems.

MODULE 4 - PLANT NUTRIENTS AND FERTILISER PLANNING

4.1 Competence

The role of plant nutrients in crop production and their application all with due regard for the protection of the environment.

4.2 Performance Criteria

Candidates must be able to

- Appreciate the principles of supplying nutrients and / or lime to a soil to supplement soil supply and / or replace crop removals.
- Understand the economic and environmental consequences of inaccurate fertiliser spreading and poor storage.
- Understand the mechanisms by which nutrients are lost to the environment.
- Be able to produce a manure management plan.

4.3 Essential Knowledge and Skills

- How to take soil samples and interpret the resulting analysis.
- The need for and use of lime, including optimum pHs for different crops and soil types.
- How to prepare fertiliser plans for single crops and rotations.
- An awareness of the need to avoid fertiliser application to non-crop areas, especially field margins.
- Know the storage requirements for different forms of fertiliser.
- Know the consequences and effects of plant nutrition options on soil, water and the environment and how nutrients are lost from plants and the soil.

MODULE 5 - THE USE OF BULKY ORGANIC MATERIALS TO ENHANCE CROP GROWTH AND THEIR EFFECTS ON DIFFUSE POLLUTION

5.1 Competence

Candidates must be aware of the advantages, risks and legal aspects of the application of farm manures and other organic manure products such as sewage sludge (as called bio-solids) and green waste composts to land. They must show that they are able to integrate the use of these materials in a nutrient management plan.

5.2 Performance Criteria

Candidates must be able to

- Plan the use of organic manures and other organic materials to give best use of the nutrients they contain.
- Explain methods of application of manures and other organic materials to land which reduce the loss of nutrients to water and air (Code of Good Agricultural Practice Protecting our Water, Soil and Air or equivalent in devolved areas).*
- Understand the requirements of the 'Sludge (Use in Agriculture) Regulations'.
- Plan the application of sewage sludge in accordance with the 'Safe Sludge Matrix'.

5.3 Essential knowledge and Skills

- The legal requirements for the application of organic materials to land (Environmental Permitting Regulations).
- The difference between total and available nutrients in manures and other organic materials.
- How to integrate nutrients in organic materials into a fertiliser plan, including the use of computer systems such as MANNER and PLANET.
- How to reduce the potential for gross and diffuse pollution to water and air during and following the application of organic materials to land.
- Be able to prepare a Farm Manure Management Plan.
- The use of organic materials to enhance soil organic matter contents.
- Rules for the application of organic materials in NVZs.
- Be able to produce a crop / nutrient requirement plan taking into account organic materials.
- Which elements are regarded as phyto and mammalo toxic and how the effects of excesses might be mitigated.

- An appreciation of the risks to human health from the application of organic materials to cropped land.
- With the knowledge from this and the fertiliser module be able to produce a Farm Nutrient Plan.

* For Scotland the Scottish Executive Code of Good Agricultural Practice (PEPFAA) for Farm Soils.

* For Wales the Cross Compliance Soil requirements.

SUGGESTED READING

Defra 'Code of Good Agricultural Practice' (Protecting our Water, Soil and Air) or Scottish Executive 'Code of Good Agricultural Practice' (PEPFAA)

Defra booklet 'Fertiliser Recommendations for Agricultural and Horticultural Crops (RB209)' (or SAC technical notes)

Defra 'Guidance for Farmers in NVZs' (or Scottish equivalent)

'Manure Planning in NVZs' (or Scottish equivalent)

Defra booklets on soil erosion control PB5820A, B and C, PB4091, PB3280, and PB4092 AND PB4093

Making Better Use of Organic Manure booklets 'Arable, Grassland, Application and Organic Farms'

Soil Management Davies, Finney and Eagle

AIC Codes of Practice for the Storage of Solid and Liquid Fertilisers

Defra Booklets

- Cross Compliance Handbook
- Guidance for Soil Management
- Entry Level Stewardship Handbook

Environment Agency Booklet – 'Best Farming Practices' and 'thinksoils'

Welsh Assembly Government – 'Cross Compliance Soil requirements

Scottish Executive – 'Farm Soils Requirements'

BASIS APPROVED TRAINERS

The following Colleges, Trainers and Training Providers are successfully running Soil & Water Management Examinations and have been accepted as BASIS Approved Trainers for Soil & Water Management.

Alasdair Lowe Limited

Grange Barn
Birds Lane
Epwell
BANBURY
Oxfordshire OX15 6LQ

Contact: Alasdair Lowe
Tel: 01295 788006
Email: alowe@alasdairlowe.co.uk
Trainer: Alasdair Lowe
Web: www.ruralagriculturalconsultants.co.uk

Boston & North Wash Training Group

Kiln House
West Fen
Stickney, BOSTON
Lincolnshire,
PE22 8BH

Contact: Margaret Dawson
Tel: 01205 480898
Email: dawsonm@dialstart.net
Trainer: Simon Goodger
Web: <http://boston--north-wash-training-group.mytrainingwebsite.co.uk/>

Chelmsford & West Essex Training Group

2 Salisbury Cottages
Maldon Road
Hatfield Peverel
CHELMSFORD
Essex CM3 2HS

Contact: Debbie Wedge
Tel: 01245 381193
Email: debbiewedge@aol.com
Trainer: Alasdair Lowe
Web: <http://www.cwetg.org>

DJL Agronomics

Highgrove House
Cassbrook Drive
Fulstow
LOUTH
LN11 0XR
Dorset DT11 0HX

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

Duchy College

Stoke Climsland
CALLINGTON
Cornwall
PL17 8PB

Contact: Alex Stephens
Tel: 01208 873220
Email: alexstephens@uwclub.net
Trainer: Alex Stephens
Web: www.cornwall.ac.uk/duchy

Fieldfare Associates Ltd

c/o SAC Consulting
J36 Rural Auction Centre
Crooklands
MILNTHORPE
Cumbria

Contact: Amy Airey
Tel: 01539 566987
Email: info@fieldfareassociates.co.uk
Trainer: Neil Carter
Web: www.fieldfareassociates.co.uk

Hampshire Training Providers Ltd

c/o Trinity Grain Ltd
Overton Road
Micheldever Station
WINCHESTER
Hampshire
SO21 3AN

Contact: Catherine Mercer

Tel: 07884 260798

Email: catherine@hampshire-training.co.uk

Trainer: Jim Lewis

Web: www.hampshire-training.co.uk

Harper Adams University

Edgmond
NEWPORT
Shropshire
TF10 8NB

Contact: Lisa Plant

Tel. 01952 815300

Email: lplant@harper-adams.ac.uk

Trainer: Paul Lewis

Web: www.harper-adams.ac.uk

Holbeach Marsh Training Group

27 Sorrel Drive
SPALDING
Lincolnshire
PE11 3GN

Contact: Lynne Richardson

Tel: 01775 762977

Email: lynne@hmtg.co.uk

Trainer: Simon Goodger

Web: www.hmtg.co.uk

Landbased Training

Garth Cottage
Wintringham
MALTON
North Yorkshire
YO17 8HX

Contact: Linda Bower

Tel: 01944 758379

Email: linda@landbased-training.com

Trainer: Alasdair Lowe

Web: www.landbased-training.com

Mid Kent Training

Suite 1, The Stables, Court Lodge Farm
Hinxhill
ASHFORD
Kent
TN25 5NR

Contact: Dianne Qusted

Tel/Fax: 01233 813688

Email: info@mkt.uk.net

Trainer: Alasdair Lowe

Web: www.midkenttraining.co.uk

Royal Agricultural University

Stroud Road
CIRENCESTER
Gloucestershire
GL7 6JS

Contact: Carole Rooke

Tel: 01285 851830

Email: carole.rooke@rac.ac.uk

Trainer: Jim Lewis

Web: www.rac.ac.uk

The Training Association (East)

High Cottage
St Andrews Lane
Congham
KINGS LYNN
Norfolk, PE32 1DS

Contact: Rob Tarry

Tel: 01485 600225

Email: rob@traineast.co.uk

Trainer: John Purslow

Web: www.traineast.co.uk

The Training Association (West)

Northfield
The Row
Wereham
KINGS LYNN
Norfolk PE33 9AY

Contact: Jo Bruce
Tel: 01366 500050
Email: jo@traineast.co.uk
Trainer: Jim Lewis
Web: www.traineast.co.uk

Vale Training Services

Marsh Hill Farm
Marsh
AYLESBURY
Buckinghamshire
HP17 8ST

Contact: Kate Mason
Tel: 01296 612201
Email: kate.mason@valetraining.co.uk
Trainer: Alasdair Lowe
Web: www.valetrainingservices.co.uk

University of Lincoln

Riseholme Park
LINCOLN
Lincolnshire
LN2 2LG

Contact: Simon Goodger
Tel: 01522 835295
Email: sgoodger@lincoln.ac.uk
Trainer: Dr Simon Goodger
Web: <http://www.lincoln.ac.uk/home/liat/shortcourses/>

The following Colleges, Trainers and Training Organisations have expressed an interest in running the Soil & Water Management Examination.

City College Norwich

Easton Campus
Easton
NORWICH
Norfolk
NR9 5DX

Contact: James Trounce
Tel: 01603 731548
Email: james.trounce@eastonotley.ac.uk
Trainer: James Trounce
Web: www.eastonotley.ac.uk

Lordington Park Agronomy

Fox Cottage
Drewton Farm Estate
Drewton
BROUGH
East Riding of Yorkshire
HU15 2AG

Contact: Jonathan Holmes
Tel: 07976 894842
Email: jholmeslpa@hotmail.com
Web: www.lordingtonparkagronomy.co.uk

04 September 2020