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FACTS Vegetables

The National Training Syllabus

Modules	% TOTAL TIME	
1. The soil in relation to plant nutrition	20%	15
2. Organic nutrient sources	5%	17
3. The nature and properties of fertilisers	5%	19
4. Crop nutrients in plants and the factors influencing the amount of fertiliser required	20%	21
5. Use of fertilisers on the main vegetable crop groups in the UK	20%	23
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FACTS SYLLABUS & INFORMATION

Introduction

FACTS is an independent non-statutory certification Scheme for advisers and sellers within the fertiliser industry. It was established in 1993 following discussions with the trade associations connected with the industry and BASIS® (Registration) Ltd. At the present time there is no legal requirement for advisers and sellers to be certificated; however it was considered that setting up such a scheme was the responsible action to take in light of the environmental pressures on the industry and increasing technical requirements. The Scheme and initiative are fully supported by Defra.

The FACTS Scheme is administered on behalf of the industry by BASIS (Registration) Ltd who have administered a similar scheme for the pesticides industry since 1978. The FACTS Management Committee is chaired by an independent chairman with representatives of trade associations from the fertiliser industry, including representatives from (AIC) Agricultural Industries Confederation (formerly the Fertiliser Manufacturers' Association (FMA) and the United Kingdom Agricultural Supply Trade's Association (UKASTA)), ADAS, the Association of Independent Crop Consultants (AICC), the Department for Environment Food and Rural Affairs (Defra), the National Farmers Union (NFU), National Association of Agricultural Contractors (NAAC), the National Association of Principal Agricultural Education Officers (NAPAEO) and the Potash Development Association (PDA).

The FACTS Annual Scheme, (including the FACTS Technical Information Service) and membership of the BASIS Professional Register, which FACTS-registered advisers can join, have been devised in response to several pressures.

Most people who take an interest in agriculture appreciate that if soil fertility is to be maintained then nutrients taken off in the crop or lost to air or water must be replaced. However, many of these people are also concerned at the actual or potential environmental harm that these losses can cause and they look to those involved to do what they can to minimise them. This is one of the pressures to which those advising farmers on fertiliser use must respond and was a driving force behind the establishment of the FACTS scheme. It allows farmers to identify those competent to advise them on all aspects of nutrient management including the requirements of the law.

There is also political pressure to respond to environmental problems either by regulation or use of what are termed economic instruments such as Nitrate Vulnerable Zones (NVZ's) or a fertiliser tax. These may be unwelcome but if environmental improvement is not forthcoming, proposals for their more widespread adoption will increase. Voluntary measures, such as FACTS, encourage the adoption of best nutrient practices and offer those involved in agriculture the opportunity to demonstrate that they care for the environment while helping their farmer customers optimise inputs. FACTS also embraces the principles of Integrated Crop Management (ICM) promoted by LEAF - (Linking Environment And Farming) - and training is compatible with ICM training courses.

There is also a need for advisers to continue their personal development. Life-long learning and Continuing Professional Development (CPD) are modern themes and for good reason. It is increasingly down to individuals rather than employers to manage their careers. This means advisers must keep up-to-date and be able to offer evidence to their customers that they can be relied upon. Gaining a FACTS qualification is only the start. It needs to be followed by an application to join the BASIS Professional Register and subscription to the FACTS Annual Scheme to fully keep up-to-date. In the years ahead we can increasingly expect assurance schemes and crop protocols to require advisers to be members of both these schemes. Such initiatives also represent the most effective response from agriculture to its critics and, it is to be hoped, they may in time result in a reduction in harmful nutrient losses.

The FACTS Management Committee

SCHEME OBJECTIVES

The overall aim of the Scheme is to ensure a high standard of proficiency of all those advising on the use of fertiliser products and selling to end users, having due regard for the protection of the environment.

To achieve these objectives the Management Committee will:

- a] develop and promote a certification scheme for those selling to farmers and advising on the use of fertilisers;
- b] establish and maintain a National Training Syllabus for fertiliser sellers and advisers;
- c] identify and liaise with recognised training centres and those providing in-house training which provide instruction on the National Training syllabus;
- d] establish and monitor appropriate examination provision for trainees, whether trained at centres, by in-house training or by home-study;
- e] approve a level of competence which candidates for certification should reach;
- f] maintain a Register of those certificated as competent to advise on fertiliser products;
- g] gradually raise the general level of competence of advice given by the fertiliser industry and others and keep under continuous review the standards of the Scheme, including the status of exemption holders;
- h] liaise closely with UK Government and the EU in order to have the registration scheme recognised and accepted by both UK and other EU Governments.

COMPOSITION OF THE FACTS MANAGEMENT COMMITTEE

Independent Chairman

Nominated by trade associations in
conjunction with BASIS and DEFRA

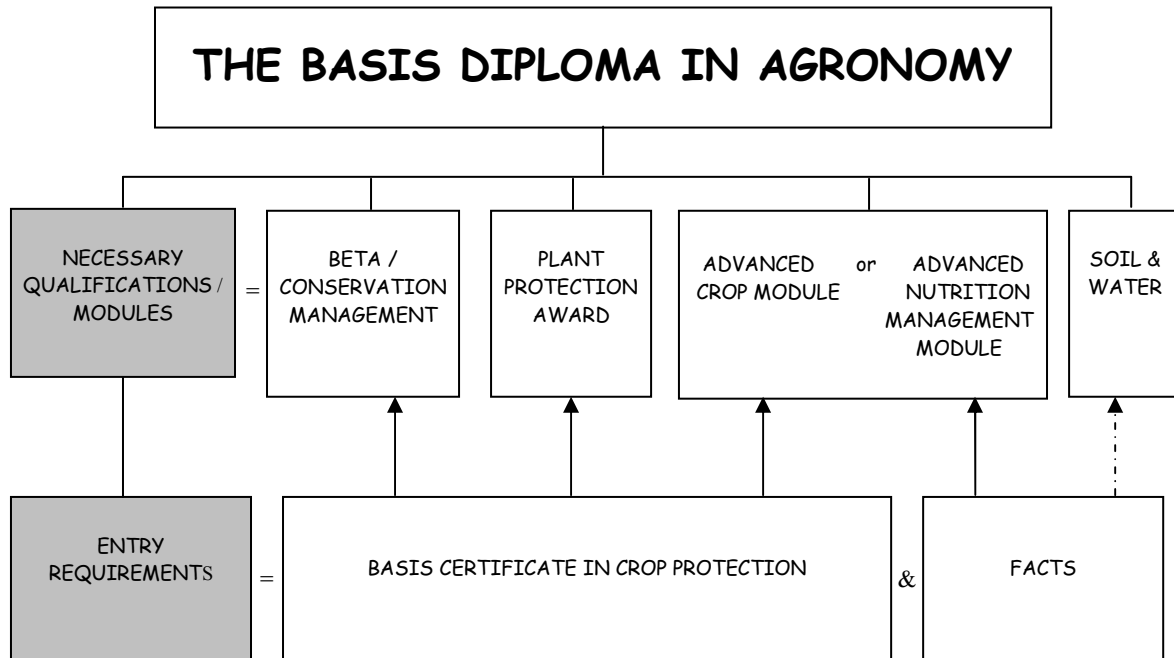
- 2 Nominated Members from the AIC Fertiliser Manufacturers' Committee
 - 2 Nominated Members from the AIC Fertiliser Distributors Committee
 - 1 Nominated Member from ADAS
 - 1 Nominated Member from the Association of Independent Crop Consultants (AICC)
 - 1 Nominated Member from the Department for Environment, Food and Rural Affairs (Defra)
 - 1 Nominated Member from the National Association of Principal Agricultural Education Officers (NAPAEO)
 - 1 Nominated Member from the National Association of Agricultural Contractors (NAAC)
 - 1 Nominated Member from the National Farmers' Union (NFU)
 - 1 Nominated Member from the Potash Development Association (PDA)
 - The Managing Director (or senior management representative) of BASIS will be eligible to attend the meetings.
- * In addition an officer of the trade associations AIC and the FACTS Technical Information Service attend the Committee by invitation.

DEFINITIONS RELATING TO THE SCHEME

- a] **"Field Sales and Advisory Staff (FSAS)"** are those employed by manufacturers, distributors, independent consultants, agents and Government bodies who are involved in selling and/or giving advice on fertilisers to end users.
- b] **"National Training Syllabus"** is the national standard on which all candidates will be assessed whether training takes place at recognised training centres, in-house or elsewhere.
- c] **"Regional Training Centres"** are training centres which have agreed to run training courses based on the national syllabus. The Approved Trainer details can be found on pages 11, 12, 13 and 14 of this book.
- d] **"Assessment of FSAS"** will involve candidates sitting a written examination based on the national syllabus and also being interviewed by a viva panel of recognised examiners from the Industry.
- e] A **"Certificated Salesman/Adviser"** should be responsible for all sales and advisory activity. In the absence (say due to sickness) of the designated salesman/adviser, supervision should be exercised only by another appropriately certificated person to whom any uncertificated staff have ready access for advice and instruction.
- f] **"Office and Depot Staff"** are staff employed by manufacturers, distributors or agents who are office based and are permitted to take counter orders and telephone sales from end users, provided no technical advice is given and the services of a certificate holder are available. This may be operated by "administrative means".
- g] **"Administrative means"** - Un-certificated staff should have ready access to a certificated member of staff by means of telephone or fax. It is not necessary that there is a certificated member of staff available on the premises at all times. A list of certificated staff should be available at the depot giving telephone numbers and a contact point.
- h] **"Direct Supervision"** of un-certificated staff should always take place except in the case of field staff training for certification where supervision, after initial training, may be exercised remotely on a daily basis. Such trainees should be expected to sit an examination for certification within three years of starting the job. Trainee staff will have received induction training by the company and will have been accompanied by a qualified member of staff on several farm/horticultural visits. All subsequent visits for sales and advice which are made unaccompanied should be monitored by a qualified member of staff until such time as the trainee obtains the Certificate of Competence.
- i] **"Exemption from Certification"** - Field sales and advisory staff with five years relevant experience acceptable to the Certification Scheme Committee on 1 September 1993, i.e. working in the industry as at 31 August 1988, were able to apply for a Letter of Exemption, until 31 December 1995.

THE BASIS DIPLOMA IN AGRONOMY

The FACTS Management Committee and BASIS (Registration) Limited have finalised the requirements for the BASIS Diploma in Agronomy and both the BASIS qualification and the FACTS qualification are now a requirement for the BASIS Diploma.



TOPICS COVERED

ADVANCED CROP MODULE / ADVANCED NUTRITION MANAGEMENT MODULE Weed, Pest & Disease Control, Crop Protection Programmes, Marketing, Food Industries, Crop Assurance, Nutrient Management

BETA / CONSERVATION MANAGEMENT Environment, Biodiversity, EIS's, CPMP's, ICM, Climate Change

PLANT PROTECTION AWARD (PPA) Systems & Society, Formulation, Mode of Action, Application, Health & Safety

SOIL & WATER 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 Module the prior achievement of the FACTS qualification is required.

The FACTS qualification (by examination, exemption or validated certificate) is a requirement for successful completion of the BASIS Diploma and strongly recommended for those wishing to train for the Soil and Water Management certificate.

Prior qualification of the BASIS Certificate in Crop Protection (or exemption or validated certificate) or the Crop Protection Management and or POWER Certificates are required for the BETA examination. In some circumstances, it may be possible for other types of prior qualification to be taken into account for BETA examination eligibility. BASIS Approved Trainers must be assured that in such cases, the prospective candidate is capable of assimilating the knowledge imparted during the BETA course tuition and also capable of passing the BETA examination.

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.

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 HAUC and the Higher Education qualifications framework has been the development by HAUC of a Graduate Diploma in Agronomy with Environmental Management.

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	Intermediate

SOIL & WATER	
Credit Value	15
Level	Honours

BASIS CROP PROTECTION	
Credit Value	30
Level	Honours

BASIS PLANT PROTECTION AWARD	
Credit Value	15
Level	Honours

BASIS ADVANCED MODULES / ADVANCED NUTRIENT MANAGEMENT MODULE	
Credit Value	15
Level	Honours

BETA / CONSERVATION MANAGEMENT	
Credit Value	15
Level	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 HAUC 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 Crop Modules or the new Nutrient Management Planning qualification, available from September 2009.

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

THE CERTIFICATE OF COMPETENCE IN FERTILISER ADVICE FOR FIELD SALES AND ADVISORY STAFF

Courses are offered by the BASIS Approved Trainers listed in this book. These centres are prepared to run courses based on the national training syllabus enabling candidates to prepare themselves for the Fertiliser Certificate of Competence.

The course is based on five days of training, including examination. The national syllabus gives candidates an outline of the training requirements.

All fertiliser staff who sell and give advice are strongly recommended to obtain a Certificate of Competence within three years of entering the industry, during which time they should be working under the supervision of a qualified member of staff.

YOUR QUESTIONS ANSWERED

- **DO I NEED TO TAKE A TRAINING COURSE IN ORDER TO SIT THE FACTS EXAMINATION?**

Not necessarily, if you feel you have enough technical knowledge and in-field experience already. However, candidates should ensure that they have been trained satisfactorily, either in-house or externally, and have had sufficient supervised field experience prior to entering for the examination. Following the introduction of the new NVZ regulations candidates should be able to understand and explain the new rules and will be examined in both written and verbal examination. They should have read and understood NVZ Guidance Leaflet No. 1 and Section 2 of RB209 (Principles of nutrient management and fertiliser use) before presenting themselves for the course and exam. It is important that, where necessary, the candidate should prepare in this way for the course - the course alone is unlikely to raise a candidate from minimal knowledge of nutrient use and relevant regulations to success in the exam. If they do not know these regulations they will not pass.

- **WHAT IS THE STANDARD OF THE COURSE?**

The overall aim of the course is that at the end of training, coupled with previous practical experience, candidates will have a basic understanding of fertilisers to enable them to give advice to farmers and growers which is both economically and environmentally sound. The emphasis will be on practical knowledge applicable when selling to, and advising, farmers and growers.

- **WHAT FORM DO THE TRAINING COURSES TAKE?**

Normally a one-week residential block (5 days) with an assessment on completion of the course. Day release or short blocks may be offered, depending on regional requirements.

- **WHERE ARE TRAINING COURSES HELD?**

At selected training centres within the United Kingdom and also at other venues, both in the UK and abroad, organised by local training groups; a list of current Approved Trainers can be found on page 35.

- **HOW DO I APPLY TO TAKE A TRAINING COURSE?**

Contact the Approved Trainer of your choice. Complete a training course application form and send it to the centre.

- **IS IT POSSIBLE TO USE CORRESPONDENCE COURSES OR EVENING CLASSES?**

Not at this stage.

- **WHEN AND WHERE ARE EXAMINATIONS HELD?**

They are currently held at each of the centres listed at the end of this book. Examinations are held when there are sufficient numbers to make them viable.

- **HOW DO I APPLY TO SIT THE EXAMINATION?**

Complete an examination application form and return it to the centre of your choice. You will be notified when an examination is to take place. (Those attending a training course will automatically be entered for the examination and so do not need to apply separately.)

- **IF I FAIL THE EXAMINATION, CAN I RE-SIT?**

Yes you can re-sit the exam; however, BASIS examinations are accredited on the Higher Education qualifications framework. One consequence of this is that we need to ensure procedures are in place to improve candidates' chances of success in subsequent examinations following a previous failure.

Where candidates have been examined unsuccessfully on two occasions, they will be required to retrain before attempting the exam for a third time.

Candidates and trainers will be required to complete a form to confirm that they have retrained, particularly covering areas that were identified as 'areas of weakness' at previous exams.

The form should be presented to the exam Chairman at the third exam attempt. Failure to confirm that retraining has taken place will result in a refusal to conduct the viva examination and subsequent 'no result' for the exam.

Please help us to help you by asking your training provider to evaluate your training needs and undertake the training required to ensure you can pass the exam.

Those candidates wishing to go forward for the 'BASIS Diploma and later the HAUC Diploma in Agronomy with Environmental Management should be aware that only four attempts at any examination will be permitted if that course is included as a qualification module for the diploma(s).

- **WHAT DOES THE EXAMINATION ENTAIL?**

Candidates will be required to sit an exam in 2 parts:

- 60 multi-choice questions (no books / notes allowed)
- A scenario questions for which candidates may use their text books and notes (ie. open book exam)

The questions will be based on the national syllabus. This will be followed by a viva panel, involving two people from the fertiliser industry and chaired by a representative of

BASIS acting on behalf of the FACTS Management Committee. The purpose of this is to enable the panel to make a final assessment of the candidate as a competent adviser in the fertiliser industry; **the decision of the panel will be final.**

- **WHAT IS THE NATIONAL TRAINING SYLLABUS?**

The standard and content of training which needs to be attained to enable trainees to prepare for the Certificate of Competence in Fertiliser Advice. Details can be found from page 15 onwards.

- **IF I APPLY FOR A JOB WITHIN THE FERTILISER INDUSTRY DO I HAVE TO HOLD THE CERTIFICATE OF COMPETENCE OR HAVE EXEMPTION FROM IT?**

At present the Scheme is non-statutory. However, if you have not previously been employed in the fertiliser industry it is recommended that you become qualified within three years of entering the industry. During that time you are strongly advised to work under the supervision of a certificate holder.

- **WHAT IS MEANT BY "WORKING UNDER SUPERVISION"?**

All good trading companies will require their new personnel to have an initial period of training, accompanied by a qualified member of their staff. There will come a time when the company will have to allow the representative to work on his own. Until such time that he/she becomes qualified, all sales and advice given by the new representative should be monitored by a qualified person.

- **IS IT A REQUIREMENT IN LAW TO HOLD A CERTIFICATE?**

The Scheme is at present non-statutory. However, the EU are looking at standards of competence relating to fertiliser sales and therefore the industry is setting a standard prior to any legislation, in order to meet public concerns that the industry is attaining the highest professional standards and to guide any legislative moves.

- **WHEN WILL I RECEIVE MY EXAMINATION RESULTS?**

We aim to issue results and feedback within 4 weeks from the date of examination. **Please note results will not be given over the telephone.**

FACTS EXAMINATION STRUCTURE

The examination is comprised of 2 elements:

- Written - 60 multi-choice questions (no books / notes allowed)
- Completion of a scenario question - incorporating a nutrient planning exercise - open book exam (text books and notes allowed)
- Viva - involving the chairman and two people from the fertiliser industry. Elements of both the multi-choice and scenario papers may be included in the viva discussions.

EXAMINATION TIMING

08.15 am	Coffee / meet Independent BASIS appointed Chairman	
08.30 - 08.45am	Examination begins and consists of:	
	60 multi-choice questions	75 mins
10.00 am	Short break	10 mins
10.10 am	1 scenario question (open book)	45 mins
11.00 am	Viva Examinations	15-20 mins per person

If you have any further queries, please do not hesitate to contact the FACTS office, c/o BASIS (Registration) Ltd, St Monica's House Business Centre, (37-39) Windmill Lane, Ashbourne, Derbyshire DE6 1EY. Tel 01335 343945 / 346138 (Fax: 01335 346488) e-mail sue@basis-reg.co.uk / steph@basis-reg.co.uk / amanda@basis-reg.co.uk web site: www.basis-reg.com

The National Syllabus

The overall aim of the course is that at the end of training, coupled with previous practical experience, candidates will have a basic understanding of fertilisers and their use to enable them to give advice to farmers and growers which is economically and environmentally sound. The emphasis will be on practical knowledge applicable when advising farmers and growers. Following the introduction of the new NVZ regulations candidates should be able to understand and explain the new rules and will be examined in both written and verbal examination. They should have read and understood NVZ Guidance Leaflet No. 1 and Section 2 of RB209 (Principles of nutrient management and fertiliser use) before presenting themselves for the course and exam. It is important that, where necessary, the candidate should prepare in this way for the course - the course alone is unlikely to raise a candidate from minimal knowledge of nutrient use and relevant regulations to success in the exam. If they do not know these regulations they will not pass.

In the syllabus, each of the eight sections is divided into:

- Aims
- Competence
- Performance Criteria
- Essential Knowledge and Skills

At the examination candidates will need to satisfy the examiners on all eight sections of the syllabus.

MODULE 1 - THE SOIL IN RELATION TO PLANT NUTRITION

Aim

To understand the basis of soil fertility in supporting plant growth, the ways that nutrients are held in the soil and the inter-relationships between them.

1.1 Competence

Candidates should appreciate the principles of crop nutrient requirements using a knowledge of the biological, physical and chemical conditions of the soil.

1.2 Performance Criteria

Candidates must be able to:

- assess the soil properties, growing conditions and yield potential associated with a particular site

- predict the likely supply of macro and micro nutrients from a soil
- appreciate the principles of supplying nutrients or lime to a soil to supplement soil supply and/or replace crop removals
- describe and interpret major soil nutrient cycles (N, P, K, Mg, S)
- recognise situations which may lead to the loss of nutrients from a soil and identify any environmental as well as economic implications

1.3 Essential Knowledge & Skills

Candidates must have the ability to:

- determine soil texture and structure
- make an assessment of soil drainage conditions and rooting depth
- take representative soil and tissue samples
- explain the establishment of the SNS index for a soil and assessment of crop N requirements
- explain the interpretation of P, K and Mg soil indices and assessment of crop requirements
- make an assessment of crop requirements for sulphur and micronutrients
- plan a liming policy for a rotation
- make an assessment of soil pH and show understanding of the pH scale
- make an interpretation of the neutralising value of liming materials

20% of total time

MODULE 2 - ORGANIC NUTRIENT SOURCES

Aim

To understand the role, value and limitations of organic fertilisers.

2.1 Competence

Candidates must be able to describe the roles of different organic fertilisers.

2.2 Performance Criteria

Candidates must be able to:

- appreciate the characteristics, analysis, and the short and longer term availability of nutrients contained in
 - a) farm yard manures
 - b) poultry manures
 - c) sewage sludge
 - d) liquid manures/slurries
 - e) composted organic materials
 - f) green manuring crops and other organic materialswhen related to specific cropping situations
- appreciate factors influencing the value of the above organic materials
- appreciate elements of farm waste management planning, storage requirements and pollution hazards arising from applications

2.3 Essential Knowledge & Skills

Candidates must have the ability to:

- explain the methods/devices for measuring the nutrient content of organic manures
- demonstrate competence in advising on rates and timing of applications in relation to soil type and prevailing patterns of rainfall distribution
- explain the possible problems of heavy metal toxicity in the application of human/animal waste products

- demonstrate familiarity with the relevant statutory requirements and codes of practice in relation to pollution, including: Environmental Permitting (land spreading of exempted wastes), Sludge (Use in Agriculture) and Control of Pollution (silage, slurry and agricultural fuel oil) Regulations.

5% of total time

MODULE 3 - NATURE AND PROPERTIES OF FERTILISERS

Aim

To understand the properties and forms of fertilisers

3.1 Competence

Candidates should be able to advise customers on the most appropriate fertiliser formulation for their specific requirements.

3.2 Performance Criteria

Candidates must be able to:

- describe the various chemical and physical properties of fertiliser formulations including
 - a) granules
 - b) prills
 - c) blends
 - d) compounds

 - e) clear solutions
 - f) suspensions

 - g) semi-organics
 - h) organic-based
 - i) chelates
 - j) pellets
- recommend the appropriate formulation for given situations
- understand the measurement units of nutrients and ratios
- calculate unit values and undertake comparison of various products

3.3 Essential Knowledge & Skills

Candidates must have the ability to:

- appreciate the range of formulations
- appreciate the quality and effective economic uses of these formulations
- demonstrate awareness of fertiliser legislation and correct labelling (cf Section 6)

5% of total time

MODULE 4 - CROP NUTRIENTS IN PLANTS AND THE FACTORS INFLUENCING THE AMOUNT OF FERTILISER REQUIRED

Aim

To understand the principles of integrated crop nutrient management and the various factors which, together with fertilisers can be used to satisfy crop requirements.

4.1 Competence

Candidates must be able to appraise a range of nutrient sources available to customers, prior to constructing nutrient and fertiliser calculations.

4.2 Performance Criteria

Candidates must be able to:

- explain the role of major plant nutrients
- calculate typical uptake and removal of nutrients by different crops
- indicate typical symptoms of deficiencies of major and minor (trace) nutrients
- interpret the law of "limiting factor"
- interpret nutrient response curves and the effect of the "law of diminishing returns"
- use a response curve to calculate an approximate break-even level for a major nutrient, eg nitrogen in cereals
- distinguish between "economic" and "maximum biological yield"
- assess and appraise the effect of crop rotation and farming practices on nutrient availability
- interpret situations suitable for "maintenance applications" in sustaining adequate crop response
- understand and interpret the main units in which advice is given and convert between the different units giving advice in metric with imperial conversions

4.3 Essential Knowledge and Skills

Candidates must have the ability to:

- explain keywords: locking up, immobilisation, mineralisation, nitrification, de-nitrification, leaching, volatilisation, uptake and chelate
- demonstrate an understanding of how to approach diagnosis of nutrient deficiencies, eg take soil and plant samples, use pH kits
- demonstrate interpretation of soil and tissue analysis results and their limitations, prior to drawing up recommendations
- demonstrate awareness of different crop measurement techniques and their relationship to nutrition, eg chlorophyll meter, leaf area index etc
- demonstrate an ability to address nutrient disorders in the context of other crop disorders
- convert between metric and imperial units and, where liquids are used, between weight/weight and weight/volume measures

20% of total time

MODULE 5 - USE OF FERTILISERS ON THE MAIN VEGETABLE CROP GROUPS IN THE UK

Aim

To be able to give advice on the nutritional requirements of specific crops based upon a sound understanding of needs and variables, and environmental considerations. Candidates will be expected to be fully conversant with crops in at least one of the following groups and competent in one other:

Brassicacae - Cabbage / Broccoli / Kale

Allium - Onions (Bulb / Spring)

Umbelliferae - Carrots / Parsnips

Potatoes

Legumes - Peas (Field Peas / Sugersnap) / Beans (Field Beans / Runner / Fine)

5.1 Competence

Candidates should be able to apply the principles in Section 1 to advise an appropriate fertiliser plan for a given crop.

5.2 Performance Criteria

Candidates must be able to evaluate a given field/horticultural situation in making appropriate objective recommendations on the use of fertiliser and lime for a particular crop's needs.

5.3 Essential Knowledge and Skills

Candidates must have the ability to:

- understand the influence of local climatic and geographic factors on fertiliser quantity and timing for a given crop
- demonstrate an interpretation of a soil analysis report and application of the information to a given crop fertiliser regime
- show how the influence of previous cropping impacts on the fertiliser plan for a following crop
- understand the role of organic manures in crop nutrition and identification of the extent to which a given crop fertiliser regime should be modified to take account of this

- show how the influence of placement methods and fertiliser formulation can affect the quantity and timing of fertiliser for a given crop
- show how the qualitative aspects to fertiliser use in a given crop can affect the quantity, form and timing of fertiliser applications

20% total time

MODULE 6 - THE TRANSPORT, STORAGE AND HANDLING OF FERTILISERS

Aim

To ensure awareness of the regulatory requirements for the safe and efficient transport, storage and handling of fertilisers.

6.1 Competence

Candidates should have a general knowledge of the statutory requirements and principles of safe transport and handling methods for fertilisers in order to advise customers with respect to health and safety and the environment.

6.2 Performance Criteria

Candidates must be able to specify the criteria for safe transport, storage and handling for different fertiliser types and show an awareness of the source and location of further references to the appropriate regulations.

6.3 Essential Knowledge and Skills

Candidates must have the ability to:

- understand the principles of safe handling of fertilisers in IBCs
- understand the potential hazards to humans and the environment from spillages and contamination of water courses
- understand the detailed requirements of storage which may help reduce the hazards of flammability / combustibility
- demonstrate an awareness of the legal requirements with regard to transport and handling, including: Health and Safety and COSHH requirements, Carriage of Dangerous Goods Regulations, ADR and DGSA.
- demonstrate awareness of the requirements for safe, short and long term, storage of fertilisers, with regard to siting, pollution and fire risk
- demonstrate knowledge of the authorities which should be notified in an emergency
- demonstrate awareness of the Fertilisers Regulations and their scope

10% of total time

MODULE 7 - APPLICATION OF FERTILISERS

Aim

To ensure awareness of the economic and environmental importance of accurate spreading of fertilisers and of the requirements for achieving accuracy.

7.1 Competence

Candidates should be able to advise on the correct use of fertiliser spreaders to ensure accurate and efficient spreading of fertilisers.

7.2 Performance Criteria

Candidates must be able to:

- identify spreader types and appreciate the principles of their maintenance, calibration and effective operation
- understand the economic and environmental consequences of inaccurate fertiliser spreading / application

7.3 Essential Knowledge and Skills

Candidates must have the ability to:

- demonstrate awareness of the separate (but combinable) effects of applying the wrong rate of fertiliser and of uneven spreading on crop yield, profitability and the environment
- demonstrate awareness of the need to avoid fertiliser application to non-crop areas, especially field margins
- demonstrate the ability to identify the different types of fertiliser spreader and to describe the principles of their operation
- demonstrate awareness of the main wearing parts in spreaders that will affect application rate or evenness of spreading
- demonstrate an understanding of the principles of spreader calibration for correct application rate
- demonstrate an understanding of the use of tray tests for evenness of spreading

- demonstrate an ability to identify a fertiliser type and to select appropriate spreader settings from an instruction book
- demonstrate an understanding of how to calculate an application rate at a variety of bout widths and forward speeds
- demonstrate awareness of the effect fertiliser quality can have on spreader performance and of appropriate fertiliser quality assessment schemes

5% of total time

MODULE 8 - CODE OF GOOD AGRICULTURAL PRACTICE AND LEGAL AND OTHER REQUIREMENTS TO PROTECT THE ENVIRONMENT.

Aim

To increase awareness and technical competence relating to the handling, storage and use of fertilisers in agriculture and their effects on the environment.

8.1 Competence

Candidates should be able to advise merchants, transport operators, customers and storage controllers on the legal and environmental issues relating to all forms of fertilisers, prior to, during and post application periods.

8.2 Performance Criteria

Candidates must be able to give guidance and advice to all purchasers, handlers and users of fertilisers in relation to legislation and environmental issues.

8.3 Essential Knowledge & Skills

Candidates must have the ability to:

- understand current UK and EU environmental legislation concerning fertiliser use and storage, relevant to the advice required
- demonstrate awareness of other legislation including: Water Resources Act 1991, Control of Pollution Act 1974, Environmental Protection Act 1990; Government advice, particularly current guidelines in Code of Good Agricultural Practice and the statutory requirements of NVZ's
- explain where more detailed advice can be obtained
- demonstrate awareness of the main issues relating fertilisers to the environment (water, soil, air) and health
- describe the requirements for, and constraints on, nitrogen use in NVZs
- demonstrate awareness of the requirements to keep records in respect of fertiliser use in NVZs , and crop protocols in particular

15% of total time

SAMPLE MULTI-CHOICE QUESTIONS FOR THE FACTS EXAMINATION

The following sample questions give a guideline of the type and presentation of questions candidates will have to answer when taking the FACTS examination. They are purely intended as a guide as it is not possible to publish old examination papers since, once these have been published, questions cannot be used again.

The written examination is followed by a viva.

1. Which of the following is not an essential plant nutrient?
 - a) Molybdenum
 - b) Sulphur
 - c) Phosphate
 - * d) Cadmium

2. Which of the following type of fertilisers are made by rolling a dry slurry in a rotary drum?
 - a) Prills
 - * b) Granules
 - c) Pellets
 - d) Crystals

3. A recommendation is for 60 kg/ha of nitrogen. Convert to units/acre.
 - * a) 48
 - b) 75
 - c) 148
 - d) 24

4. The potassium index of a soil is estimated from:
 - a) Soil type
 - b) Potential yield of crop
 - * c) Laboratory analysis
 - d) Previous cropping history

5. Which of the following is not an acceptable way of storing liquid fertilisers?
- a) Mild steel tanks suitably coated and constructed
 - b) Glass-fibre reinforced plastic tanks
 - * c) Un-supported flexible containers for temporary storage only
 - d) None of the above
6. If field heaps are used for the storage of poultry manure, what is the minimum distance which must separate them from water-courses, ditches and field drains?
- a) 5m
 - b) 25m
 - c) 15m
 - * d) 10m
7. Which of the following is true. In Nitrate Vulnerable Zones (NVZs)
- a) no more than 170 kg N/ha of manufactured fertiliser-N can be applied to any crop
 - b) manufactured nitrogen fertilisers cannot be applied to fields with shallow or sandy soil
 - c) manufactured nitrogen fertilisers cannot be spread within 60m of a borehole
 - * d) farmers must keep records of all applications of manufactured nitrogen fertilisers

Questions in bold are considered more demanding on candidates. Question selection for multiple-choice papers ensures a proportion of questions are in this category.

The exam paper will include a number of similar questions to those listed here which are designed to test the candidates' ability, using the available information in RB209 or (for Scotland) the Scottish Technical Notes, the Soil Nitrogen Supply Index and/or a Nutrient Management Plan for the crop.

The number of questions asked will reflect the time given for candidates to complete the paper.

Pass mark will be 70%

The following scenario is an example of the type of question which will be asked in future FACTS exams.

Sample Fertiliser Scenario

FACTS VEGETABLES FERTILISER EXERCISE

Larkrise Farm is on a light sandy soil (texture loamy sand) in Suffolk. The mean annual rainfall is 550 mm and average excess winter rainfall is 100mm.

Soil analysis for Barn Field is: pH 6.2., P (Olsens) 28 mg/l, K 210 mg/l, Mg 41 mg/l

The rotation for the field is :

Carrots

Potatoes

Leeks

Winter Wheat

- a) What is the Soil Nitrogen Supply (SNS) Index for the leek crop based on the field assessment method?
- b) What is the SNS Index for the carrot crop following the wheat crop based on the field assessment method?
- c) Using the SNS Index calculated above and the soil analysis information what would be the fertiliser recommendation of nitrogen, phosphate, potassium and magnesium for the leek crop following potatoes
- d) What would be the appropriate timing to apply the fertiliser?
- e) Does the leek crop need any lime and if so how much?

REFERENCE MATERIALS

The following list of reference books may be helpful to candidates intending to take training and the examination for the FACTS Certificate. Candidates are not expected to obtain all of the publications listed, many may already be held in company's own libraries. Having access to the publications will be sufficient. They are in any event only required for reference material unless marked * when they are essential tools.

GENERAL AGRICULTURE

Crop Husbandry - Lockhart and Wiseman (New Ed. In press)

The Agricultural Yearbook, (latest edition) Ed. R J Soffe, Blackwell Science

SOILS/FERTILISER REFERENCES

* Code of Good Agricultural Practice (or equivalent for Scotland, Wales or Northern Ireland)

Code of Practice for Agricultural Use of Sewage Sludge (1989) The Stationery Office

* The Safe Sludge Matrix

Crop Nutrition and Fertiliser Use - John Archer, Farming Press Ltd

Diagnosis of Mineral Disorders in Plants - Vol 1: Principles - C Bould, E J Hewitt, P Needham
MAFF/ARC HMSO

Farming, Fertilisers and the Nitrate Problem- T M Addiscott, A P Whitmore, D S Powlson
IACR Rothamsted

* Guidance for Farmers in Nitrate Vulnerable Zones

* Fertiliser Recommendations - Defra Booklet No RB 209 7th Edition (2000) The Stationery Office

Manual Handling - Guidance on Regulations L23, The Stationery Office, 1992

Soil Management - D B Davies, D J Eagle and B Finney

Storing and Handling Ammonium Nitrate, IND (G) 23OL, Health and Safety Executive, 1997

USEFUL WEBSITES

www.agindustries.org.uk
www.aglime.org.uk
www.adlib.ac.uk
www.basis-reg.co.uk
www.defra.gov.uk
www.environment-agency.gov.uk
www.fertiliser-society.org
www.factsinfo.org.uk
www.fwag.org.uk
www.leafuk.org
www.pda.org.uk
www.scotland.gov.uk
www.sepa.org.uk
www.secureyourfertiliser.gov.uk
www.hbci.com/~wenonah/min-def/list.htm

VIDEOS

Farm Waste Management Plans, DEFRA
Pollution - prevention pays, Environment Agency

REGULATIONS

Candidates must be familiar with the regulations but are not expected to be authoritative.

Control of Major Accident Hazards Regulations 1999 SI No 743

Control of Substances Hazardous to Health Regulations 1994, SI No 1657

Dangerous Substances (Notification and Marking of Sites) Regulations 1990, SI No 304

Explosives Regulations (Northern Ireland) 1972, as amended, SI No 118 [not for mainland]

Manual Handling Operations Regulations 1992, SI No 2793

Planning (Hazardous Substances) Regulations 1992, SI No 656

The Carriage of Dangerous Goods and use of Transportable Pressure Equipment Regulations, 2004 (CDGTPE) SI No 568

The Fertilisers Regulations 1991, as amended, SI No 2197

**Copies of all the above can be obtained from the Stationery Office,
at <http://www.legislation.hms.gov.uk/legislation/uk.htm>**

BOOKS ARE AVAILABLE FROM:

Landsmans Bookshop Limited
Buckenhill
Bromyard
Hereford
HR7 4PH

Tel/Fax: 01885 483420

Defra PUBLICATIONS ARE AVAILABLE FROM:

The Stationery Office
PO Box 29
NORWICH
NR3 1GN

Online bookshop at www.tso.co.uk

Also available from:

Defra Publications
Admail 6000
LONDON
SW1A 2XX

AIC PUBLICATIONS ARE AVAILABLE FROM:

The Agricultural Industries Confederation
East of England Showground
Peterborough
PE2 6XE

Tel: 01733 385230

Fax: 01733 385270

Website: www.agindustries.org.uk and www.fma.org.uk

PDA LEAFLETS ARE AVAILABLE FROM:

The Potash Development Association
PO Box 697
YORK
YO32 5WP

Tel/Fax: 01904 492009

Website: www.pda.org.uk

Email: info@pda.org.uk

CERTIFICATE OF COMPETENCE IN FERTILISER ADVICE

The following Colleges, Trainers and Training Providers are successfully running FACTS Vegetable examinations and have been accepted as BASIS Approved Trainers for FACTS Vegetables.

David Godsmark
Swallowfield
Eastergate Lane
Eastergate
CHICHESTER
West Sussex, PO20 6SJ

Contact / Trainer: David Godsmark
Tel: 01243 543834
email: dgodsmark@lineone.net

DJL Agronomics
Highgrove House
Cassbrook Drive
Fulstow
LOUTH, LN11 0XR

Contact / Trainer: Dr Jim Lewis
Tel: 01507 363698
email: jim.lewis@fsmail.net
Web: www.djlag.co.uk

James Christian-Ilett
8 Painshall Close
Welton
LINCOLN
Lincolnshire, LN2 3NU

Contact / Trainer: James Christian-Ilett
Tel: 01673 860925
Fax: 01673 860925
email: christian.ilett@btinternet.com

The Real IPM Company
PO Box 4001
Madaraka
Thika 01002
KENYA

Contact: Henry Wainwright
Tel: 00254 722 655983
email: wainwright@realipm.com
Web: www.realipm.com

University of Lincoln
Short Course Unit
Riseholme Park
LINCOLN
Lincolnshire
LN2 2LG

Contact / Trainer: Dr Simon Goodger
Tel: 01522 895295
email: sgoodger@lincoln.ac.uk

The following Colleges, Trainers and Training Organisations have expressed an interest in running some, or all, of the training modules and / or the FACTS Vegetables examination.

Chelmsford & West Essex Training Group

2 Salisbury Cottages

Maldon Road

Hatfield Peverel

CHELMSFORD

Essex, CM3 2HS

Contact / Trainer: Debbie Wedge

Tel: 01245 381193

Email: debbiewedge@aol.com

North Cheshire Training

The Bothy

Dunham Town Gardens

Dunham Massey

ALTRINCHAM

Cheshire

WA14 4SH

Contact: Carolyn Hewitt

Tel: 0161 9283120

email: hewittcarolyn@btconnect.com

The Training Association (pdfw)

Grays Farm

Peterborough Road

Crowland

PETERBOROUGH

Cambs

PE6 0AD

Contact: Stella Parker

Tel: 01733 210346

e-mail: stella.parker@graysfarm.org.uk

Web: www.traineast.co.uk