Higher National Unit specification

General information for centres

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Unit code: F1MP 34

Unit purpose: The aims of this Unit are to develop candidate skills in the recognition of the common pests, diseases, weeds and disorders that affect ornamental, fruit and vegetable plants, and lawns growing in gardens, and in the appropriate selection of control measures. It will also allow candidates to develop knowledge on how to prevent or minimise the effects of pests, diseases and weeds. Candidates will be made aware that it is essential to maintain plant health and to ensure that gardeners derive maximum enjoyment from the plants that they grow. The Unit is aimed at individuals, such as garden designers, who are often consulted by their clients about problems with existing plants in their gardens.

On completion of the Unit the candidate should be able to:

1   Identify a range of common pests, diseases, weeds and disorders.
2   Describe a range of methods available for controlling pests, diseases and weeds.
3   Select measures suitable for controlling specified pests, diseases and weeds.

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.

Recommended prior knowledge and skills: Prior knowledge or skills are not essential for this Unit. However, it would be beneficial if candidates have a basic knowledge of pests, diseases and weeds of garden plants, possibly gained from vocational experience. In addition, it would be a great advantage if candidates had studied, or were studying the Units F21S 34 *Horticulture: Plant Recognition and Use*, F21V 34 *Soil Management* and F1JD 35 *Lawn Construction and Management*.

Core Skills: There are opportunities to develop the Core Skill of Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

General information for centres (cont)

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Assessment: Outcome 1 could be assessed by an identification exercise under supervised conditions, where the candidates identify a range of common pests, diseases, weeds and disorders that affect plants growing in gardens. Outcomes 1 and 2 could be assessed using a combined identification exercise and restricted response test that should be supervised, closed-book, and last approximately two hours. Each Outcome could also be assessed separately in the same way, but with each test being restricted to approximately one hour. Alternatively, Outcomes 2 and 3 could be assessed by a single instrument of assessment in which the candidates are presented with an assignment to describe and select measures for controlling pests, diseases and weeds.

Higher National Unit specification: statement of standards

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Unit code: F1MP 34

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Identify a range of common pests, diseases, weeds and disorders

Knowledge and/or skills

- Pest identification
- Disease identification
- Weed identification
- Recognition of non-pathogenic disorders

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- identify a minimum of 25 garden plant protection problems correctly

Assessment guidelines

This Outcome could be assessed by an identification test under supervised conditions in which candidates are asked to identify pest, disease and weed specimens or the damage/symptoms caused by pest and disease attack, and symptoms caused by non-pathogenic disorders. Candidates should learn a minimum of 30 specimens to include not fewer than 8 from each of pests, diseases and weeds, and a minimum of 3 non-pathogenic disorders. Candidates may be provided with appropriate keys and/or bring one A4 sheet of notes that they have made personally to the assessment. They may not bring textbooks, lecture notes/handouts or other material. Any A4 sheet of notes should be handed in at the end of the assessment.

To ensure that candidates will not be able to foresee what specimens may be presented, a minimum of 30 specimens must be taught and available for assessment. Fresh, live material should be used wherever possible. Where it is not possible to provide fresh material, eg due to time of delivery, then appropriately preserved or photographic material may be substituted.

Assessment of this Outcome could be combined with Outcome 2, details of which are given under Outcome 2 below.

Higher National Unit specification: statement of standards (cont)

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Outcome 2

Describe a range of methods available for controlling pests, diseases and weeds

Knowledge and/or skills

♦ Preventative measures
♦ Biological control
♦ Chemical-free control
♦ Chemical control
♦ Integrated control
♦ Effectiveness of control

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can, for each of two pests, two diseases and two weeds in specific situations:

♦ describe preventative measures
♦ describe chemical-free control
♦ describe biological control
♦ describe chemical control
♦ describe integrated control
♦ outline the effectiveness of each control option

For each of the above Evidence Requirements evidence should be produced covering a minimum of two pests, two diseases and two weeds.

Assessment guidelines

The Outcome should be assessed in a vocational context relevant to the candidate or derived from a workplace situation, and should be drawn from a selection of pest, disease and weed specimens identified in Outcome 1. Two different pests, disease and weed scenarios are required on each occasion the Outcome is assessed.

Evidence for the knowledge and/or skills in this Outcome may be provided on a sample basis. Evidence could be generated through a supervised, closed-book assessment. Where the knowledge is sampled, the samples should comprise at least three of the bullet points in the knowledge and/or skills items listed above. In order to ensure candidates will not be able to foresee the sample, the whole of the content listed must be taught and available for assessment, and a different sample is required each time the Outcome is assessed, to which candidates must give a satisfactory response.

Alternatively, evidence could be generated through an unsupervised assessment. It should cover all of the items listed in the knowledge and skills section for Outcome 2, and generate the evidence in the bullet points in the Evidence Requirements listed above.

Higher National Unit specification: statement of standards (cont)

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

If the assessment of this Outcome involves sampling knowledge, it may take the form of a supervised closed-book, restricted response test and could be combined with the identification exercise assessment of Outcome 1 above, where examples within this Outcome are drawn from specimens presented in Outcome 1.

Assessment of this Outcome may be combined with Outcome 3, and could take the form of a report or reports based on a case study, or an assignment, as detailed in Outcome 3 below.

Outcome 3

Select measures suitable for controlling specified pests, diseases and weeds

Knowledge and/or skills

♦ Control measures
♦ Selection of control measures
♦ Limitations and hazards associated with control

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

♦ select an appropriate control measure and justify the choice
♦ outline the limitations and hazards associated with selected method of control

For each of the above Evidence Requirements evidence should be produced covering a minimum of two pests, two diseases and two weeds.

Assessment guidelines

The Outcome should be assessed in a vocational context relevant to the candidate or derived from a workplace situation, and should be drawn from specimens identified and studied in Outcome 1. Different pest, disease and weed scenarios are required on each occasion the Outcome is assessed.

The Outcome could be assessed in the form of a supervised, closed-book restricted response test, or unsupervised assignment/report, in which the candidates are presented with different pest, disease and weed infestations affecting garden plants.

Assessment of this Outcome may be combined with Outcome 2 as a single instrument of assessment, and could take the form of a report or reports based on a case study, or an assignment conducted under unsupervised conditions. Candidates should describe and select measures for controlling pest, disease and weed infestations in specific garden situations. It should cover all of the items listed in the knowledge and skills sections for Outcomes 2 and 3, and generate the evidence in the bullet points in the Evidence Requirements listed above. Assignments/reports can be supplemented with additional questions to ensure all aspects of the Evidence Requirements are covered.

Administrative Information

Unit code: F1MP 34

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Superclass category: SE

Original date of publication: July 2008

Version: 01

History of changes:

Version	Description of change	Date

Source: SQA

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

Higher National Unit specification: support notes

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

The aims of this Unit are to develop candidate skills in the recognition of the common pests, diseases, weeds and disorders that affect ornamental, fruit and vegetable plants, and lawns growing in gardens, and in the appropriate selection of control measures. The Unit also allows candidates to develop knowledge on how to prevent or minimise the effects of pests, diseases and weeds. Candidates intending to take up employment in garden design, development or management requires such knowledge and skills. It also provides knowledge required by candidates intending to seek more advanced studies in garden design. Candidates should be encouraged to develop identification skills by being exposed to a wide range of pest, disease, weed and disorder specimens that affect garden plants. Whilst emphasis may be placed on specimens or problems prevalent in distinct geographical regions, problems of national significance should not be ignored. Lectures and tutorials should be supported by practical classes and garden visits, resource materials, preserved specimens, photographs and by use of computer-based learning packages to develop skills and knowledge.

Outcome 1 should introduce the use of recognised common names for pests and diseases, and accepted common and Latin names for weeds. Candidates should be introduced to the basic life-cycles of causal agents, and stages of importance in causing damage and/or control identified. Practical classes and garden visits should be used to enable students to recognise and identify a range of plant protection problems including pest, disease and weed specimens or the damage caused by pest and disease attack, and symptoms caused by non-pathogenic disorders. Non-pathogenic disorders should include poor light, high/low humidity, frost, windburn, lack of water, irregular watering, waterlogging, examples of mechanical and chemical injury and mineral deficiencies (Ca, Fe, N, P, K, Mg). Fresh live material should be used wherever possible. Where it is not possible to provide fresh material, eg due to time of delivery, then appropriately preserved or photographic material may be used. Candidates should become familiar with using garden guides for identification of problems, and procedures for identifying 'unknown' pests, diseases, weeds and disorders should be covered.

Outcomes 2 and 3 consider appropriate preventative and curative measures for common pests, diseases and weeds of garden plants. This should be achieved through the appraisal of a range of potential options including: preventative measures (ultrasonic sound repellents, hygiene, resistant cultivars, good husbandry, maintaining healthy plants, optimum feeding and watering, disposal of debris and prunings, weeding, crop rotation); chemical-free control (companion planting, pheromone traps, grease bands and sticky traps, barriers, fleeces, hot water treatment, mulching, hand-weeding); biological control (introduction of predators, encouraging natural predators); chemical control and integrated control. Chemical control should be restricted to a brief introduction to the different pesticides (eg contact/systemic fungicides and insecticides, contact/translocated herbicides, and repellents) and their uses, and should not cover the properties of specific active ingredients. Candidates should be made aware of appropriate technical literature (eg The Royal Horticultural Society) to select control measures.

Higher National Unit specification: support notes (cont)

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

The strengths and limitations of different control measures should be evaluated. Candidates should be made aware of the costs of implementing appropriate control measures, and of the potential hazards to humans, the environment, wildlife (including domestic animals), soil and water from the incorrect use of garden pesticides. Awareness of hazards arising from pesticide drift and plant sensitivity (phytotoxicity) should be highlighted.

Guidance on the delivery and assessment of this Unit

This Unit is primarily designed to provide candidates with technical or professional skills related to occupations in Garden Design. It can be delivered as a free-standing Unit or as part of a Group Award. Candidates will need to relate information learnt in this Unit to the requirements of the Graded Unit.

When the Unit is delivered as part of a Group Award, it would be beneficial to deliver it after or in conjunction with the complimentary Units *Plant Growth and Development*, *Plant Recognition*, *Soil Management* and *Lawn Construction and Management*. Under these circumstances, candidates would more easily appreciate the integration of the contents of each Unit.

Delivery should place emphasis on the practical aspects of pests, diseases, weeds and disorders of garden plants. It should include a range of approaches from formal lectures to group discussions and library sessions, giving access to appropriate publications and websites. Computer-based learning packages could be used. Appropriate photoguides and popular articles on common garden pests, diseases and weeds should be made available. Practical sessions on the identification of common pests, diseases, weeds and physiological disorders should be conducted using fresh, live material, preserved specimens and/or photographic material.

The following texts may be helpful in the delivery of this Unit:

♦   Adams, C.R. & Early, M.P. (2004), '*Principles of Horticulture'* (4th Edition). Elsevier.

♦   Buczacki, S. & Harris, K. (2005), '*Pests, Diseases & Disorders of Garden Plants' (Collins Photoguide). Collins*.

♦   Hessayon, D.G. (2002), '*The Lawn Expert*' Expert Books

♦   Readman, J. (2000), '*Controlling Weeds without using Chemicals'* HDRA/Search Press

♦   Walker, J. (2003), '*Weeds — an earth-friendly guide to their Identification, Use and Control.*' Cassell Illustrated.

♦   Appropriate photoguides and current WWW-sites.

Higher National Unit specification: support notes (cont)

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

Opportunities for developing Core Skills

There are opportunities to develop the Core Skill of Problem Solving at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Open learning

This Unit could be delivered by distance learning. It is probable that candidates would need to attend the centre for assessment of Outcome 1, though this could be done in other locations under approved supervision. Arrangements would have to be made to ensure that the practical identification test of Outcome 1 is supervised by a responsible person and clearly recorded (using an assessment checklist) for the assessor. It is also recommended that a single instrument of assessment for Outcomes 2 and 3 is conducted in a supervised environment under controlled conditions.

For information on open learning, please refer to the SQA guide, *Assessment and Quality Assurance of Open and Distance Learning* (**www.sqa.org.uk**).

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (**www.sqa.org.uk**).

General information for candidates

Unit title: Pests, Diseases, Weeds and Disorders of Garden Plants

This Unit is designed to enable you to develop skills in the recognition and control of pests, diseases, weeds and disorders of garden plants including ornamentals, fruit and vegetables and lawns. It is intended to prepare you to become a garden designer or professional gardener, able to recognise common problems affecting garden plants and select appropriate control measures. It also provides knowledge you require if you intend to pursue more advanced studies in garden design or professional gardening. It covers three main areas (1) the identification of common pests, diseases, weeds and disorders; (2) the identification of appropriate control measures; (3) the limitations and hazards associated with control measures.

Upon completion of the Unit, you should be able to assess garden plants for pests, diseases, weeds and disorders, and recommend appropriate control strategies. In order to complete the Unit, you will be expected to achieve a satisfactory level of competence in the recognition and identification of a range of important pests, diseases, weeds and disorders affecting garden plants. In addition, you will be expected to select and state the effectiveness of control strategies for these problems.

Assessment may take the form of three individual linked assessments, with each set at a different time during the delivery of the Unit. Alternatively, assessment may be by two linked assessments. The selection of assessment will depend on the mode of delivery and is most likely to consist of a practical identification test, a written report or assignment. In each case, assessments will be based on vocationally relevant eaxamples and, whenever possible, should relate to practical experiences or garden visits.