

Higher National Unit Specification

General information for centres

Unit title: Plant Protection

Unit code: D7VW 34

Unit purpose: Candidates will be made aware that it is essential within the land-based industries to be able to protect plants and crops from damage and loss due to weeds, pests and diseases. The aims of this unit are to develop candidate skills in the recognition and identification of plant protection problems and in the appropriate selection of control measures. On completion of the unit candidates should be able to:

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

1. Identify common pest, disease and weed problems.
2. Describe the ways in which pests, diseases and weeds interfere with plant growth, crop production or in the provision of services.
3. Select appropriate measures for the control of pests, diseases and weeds.

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

SCQF (the Scottish Credit and Qualifications Framework) brings Scottish qualifications into a single framework of 12 levels ranging from SQA Access 1 to doctorates. The SCQF includes degrees; HNC/Ds; SQA National Qualifications; and SVQs. Each SQA Unit is allocated a number of SCQF credit points at a specific level. 1 SCQF point = 10 hours of learning. HN candidates are normally expected to input a further number of hours, matched to the credit value of the Unit, of non-contact time or candidate-led effort to consolidate and reinforce learning.

Recommended prior knowledge and skills: Prior knowledge or skills are not essential for this unit. However it would be beneficial if candidates did have vocational experience in an appropriate discipline or had studied, or were studying, pesticide application modules, or had gained certification in pesticide application e.g. PA1A, PA2 or PA6A.

Core skills: There may be opportunities to gather evidence towards core skills 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)

Assessment: The unit could be assessed by a single instrument of assessment which would require the candidates to produce a report or reports and answer questions based on a case study or vocationally relevant plant protection scenarios. It would be possible to break this unit down into three separate assessment events that assessed each outcome separately. Assessment should be carried in controlled conditions, and, if taking place as a single event, it is suggested that this should last two and a half hours.

Higher National Unit specification: statement of standards

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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 COMMON PEST, DISEASE AND WEED PROBLEMS

Knowledge and/or skills

- Systems of classification & the use of keys
- Plant anatomical and morphological characters
- Growth habits of plants
- Identification keys
- Invertebrate orders
- Botanical terminology
- Entomological terminology
- Plant recognition skills
- Recognition of plant disease symptoms
- Recognition of pest damage
- Lifecycles of pests, diseases and weeds
- Crop Growth Keys

Evidence requirements

Evidence for the knowledge and/or skills in this outcome will be provided on a sample basis and should be generated through supervised practical tests. Each candidate will need evidence to show they can:

- Identify a minimum of 30 plant protection problems correctly.

Higher National Unit specification: statement of standards (cont)

Unit title: Plant Protection

Evidence could be generated using practical tests in which candidates are asked to identify pest, disease and weed specimens or the damage generated by pest or disease attack. Candidates should learn a minimum of 50 plant protection problems, to include not fewer than 15 from each group. Specimens can be selected according to regional and/or vocational importance.

To ensure that the candidates will not be able to foresee what items may be presented, a minimum of 50 specimens must be taught and be available for assessment. Fresh, live material should be used wherever possible. Where it is not possible to provide fresh material e.g. due to time of delivery, then appropriately preserved or photographic material may be substituted.

Assessment guidelines

The assessment of this outcome can be combined with outcomes 2 and 3 as part of a single assessment of the unit, details of which are given under outcome 3 below. Alternatively the assessment of this outcome can be combined with outcome 2 as detailed under outcome 2 below.

Outcome 2

DESCRIBE THE WAYS IN WHICH PESTS, DISEASES AND WEEDS INTERFERE WITH PLANT GROWTH, CROP PRODUCTION OR IN THE PROVISION OF SERVICES

Knowledge and/or skills

- Qualitative plant or crop losses
- Quantitative plant or crop losses
- Loss of aesthetic value
- Economic losses
- Thresholds

Evidence requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that s/he can, with reference to a particular problem, describe the ways in which pests, diseases and weeds interfere with plant growth, crop production or in the provision of services. This should be assessed in a vocational context relevant to the candidate and may be presented in a case study or derived from a workplace situation and should be drawn from problems identified and studied in Outcome 1.

Higher National Unit specification: statement of standards (cont)

Unit title: Plant Protection

In order to ensure that the candidates will not be able to foresee what items will be assessed, a different sample of knowledge and/or skills items is required each time the outcome is assessed.

Assessment guidelines

Assessment may take the form of closed book, invigilated assessment, case study or report on a real-life scenario. It may be combined with Outcome 1 above where examples for assessment within this outcome are drawn from specimens presented in outcome 1.

Outcome 3

SELECT APPROPRIATE MEASURES FOR THE CONTROL OF PESTS, DISEASES AND WEEDS

Knowledge and/or skills

Methods of controlling pests, diseases and weeds

Timing of control measures

Appraisal of control measures

Cultural Control Techniques

Chemical Control - Pesticides

Biological Control Options

Legislation

Mechanical Control Techniques

Life-cycles of weed, pest & disease organisms

Health & Safety

Environmental Issues

Evidence requirements

Candidates will need evidence to demonstrate their knowledge and/or skills to select appropriate measures for the control of pests, diseases and weeds in vocationally relevant areas. Evidence should be generated by assessment undertaken in controlled conditions or in the workplace.

In order to ensure that candidates will not be able to foresee what items will be assessed, a different sample of knowledge and/or skills items is required each time the outcome is assessed.

Higher National Unit specification: statement of standards (cont)

Unit title: Plant Protection

The evidence presented should demonstrate that the candidate can:

- Identify a range of potential control options for a given situation
- Appraise the probable effectiveness of each potential control option
- Select and justify a control strategy

Assessment guidelines

This outcome may be assessed alone or may be combined with the assessment for outcomes 1 and 2 and in such a case would assess the whole unit holistically. In such a situation care should be taken to ensure that for each outcome pests, diseases and weeds are assessed.

Administrative Information

Unit code: D7VW 34

Unit title: Plant Protection

Superclass category: SC

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Higher National Unit specification: support notes

Unit title: Plant Protection

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 skills in the recognition of plant and crop protection problems and in particular the losses caused by pests, diseases and weeds and to develop an understanding of strategies that may be adopted for their prevention or control. The unit is suitable for delivery within the contexts of all land-based industries and the emphasis in delivery should be with regard to the vocational group or groups being taught. The unit primarily intends to develop candidates skills in the correct identification of plant and crop protection problems and to provide an appreciation of the potential control or preventative measures that could be adopted. Candidates should be encouraged to develop identification skills by being exposed to a wide range of material relevant to the particular group award. Whilst emphasis may be placed on specimens or problems prevalent in distinct geographic regions, problems of national significance should not be ignored. Lectures and tutorials should be supported by practical classes and field visits, resource materials, preserved specimens, and by the use of computer-based learning packages to develop skills and knowledge. In the context of this unit, “pests” should include vertebrate and invertebrate pest species.

Outcome 1 should introduce the use of recognised common and scientific names for weeds, pests and diseases. Candidates should be introduced to the life-cycles of causal agents, and stages of importance in causing damage and/or for control identified. Identification to species level for invertebrates would not normally be expected unless this is the normal expectation of a competent professional plant protectionist. Candidates should become familiar with recognised keys for the field identification of problems appropriate to their vocational area and become competent in the terminology and language of plant/crop protection.

Outcome 2 identifies the losses caused by pest species in production and amenity situations as appropriate and should develop the candidates knowledge and understanding of the effects of pests, diseases and weeds on plant and crop growth. Qualitative and quantitative losses should be studied and the concepts of thresholds investigated.

In outcome 3 candidates consider appropriate preventative and/or curative measures for plant/crop protection problems. This should be achieved through the appraisal of a range of potential options, taking due regard to personal, public and environmental safety in the selection of a control strategy or strategies. Health & Safety, environmental issues e.g. LERAP, risk assessment and COSHH should be covered with respect to the use of pesticides.

Higher National Unit specification: support notes (cont)

Unit title: Plant Protection

In this area in particular this unit complements professional certification or training in pesticide use and articulates with the unit “*Pesticide Application*”.

This unit provides the preferred prerequisite to “*Integrated Plant Protection*”

Guidance on the delivery and assessment of this Unit

This unit can be delivered as a free-standing unit or as part of a group award. As part of a group award it would be beneficial for it to be delivered after or in conjunction with complimentary units e.g crop production units in agriculture or horticulture, amenity/landscape maintenance units in amenity horticulture or landscape, turf care units in greenkeeping etc. In these circumstances candidates will more easily appreciate the integration of the material. This should also allow the unit to be delivered in a way that enables candidates to appreciate its relevance to the occupational area concerned. Wherever possible links should be drawn to situations which candidates will understand e.g. control strategies to crop growth stages.

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. Where assessment is by distance learning it is recommended that a single assessment for outcomes 1, 2 & 3 is delivered 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* (SQA, 2001).

Special needs

This Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements for Candidates with Special Needs and Candidates for whom English is an Additional Language* (SQA, 2000).

General information for candidates

Unit title: Plant Protection

This unit is designed to enable you to develop skills in the recognition of pests, diseases and weeds of importance in the UK. It is intended to prepare you to become a practical plant/crop protectionist working in the field, able to recognise problems and to implement a solution. As such it covers three main areas: the recognition of plant/crop protection problems; an appreciation of how these problems damage plants/crops and cause loss; and the identification of appropriate control measures.

Upon completion of the unit you will be expected to be able to assess growing crops and recommend 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 and weeds appropriate to your vocational area. In addition you will be required to know what losses these problems may cause if left uncontrolled. Finally you will be expected to satisfactorily select and appraise control strategies for these problems.

Assessment may take the form of three individual though linked assessments each set at a different time during the delivery of the unit. Alternatively assessment may be by two linked assessments, one incorporating outcomes 1 & 2 and the second covering outcome 3. A final option is to assess by one holistic assessment covering all outcomes. The selection of assessment will depend on mode of delivery. In each case however assessment will be by means of vocationally relevant example or case study and wherever possible should relate to practical work experiences or industry visit.