



Higher National Unit specification

General information for centres

Unit title: Protected Crops

Unit code: F1JJ 35

Unit purpose: This Unit aims to introduce the candidate to the commercial production of protected crops. Candidates will gain an understanding of the demand for edible crops, pot plants and cut flowers grown under protection. Candidates will gain an understanding of what is involved in producing edible crops, pot plants and cut flowers under protection and how to plan their production.

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

- 1 Define the factors influencing production of protected crops.
- 2 Plant the production of protected crops.

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

**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 may be beneficial for candidates to have had practical experience in plant propagation and potting, pruning and growing on of plants. This could be through work experience or the completion of Units like F1JA 34 *Horticultural Practices*.

Core Skills: There are opportunities to develop the Core Skills of *Communication* and *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.

Assessment: The assessment of this Unit can reflect the teaching approach taken by a particular centre. Outcome 1 should be assessed first, for example in a closed-book assessment or could form part of a written report. Outcome 2 could be assessed as a written report based on a case study for an edible and in-edible crop. The crops given to each candidate should be different and not ones covered during the teaching of the Unit.

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

Define the factors influencing production of protected crops

Knowledge and/or Skills

- ◆ Major crops based on area and value
- ◆ Major markets for protected crops
- ◆ Changes in demand of protected crops
- ◆ Major competition for UK producers
- ◆ Quality standards for specific crops

Evidence Requirements

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

- ◆ identify the size of the overall markets of the edible and non-edible sectors in the UK
- ◆ describe changes in demand for protected crops
- ◆ identify sources of competition for UK producers
- ◆ define quality standards for protected crops

Assessment Guidelines

This Outcome could be assessed by a report of approximately 500 words.

The assessment for this Outcome could be combined with Outcome 2.

Higher National Unit specification: statement of standards (cont)

Unit title: Protected Crops

Outcome 2

Plan the production of protected crops

Knowledge and/or Skills

- ◆ Production of edible and non-edible crops
- ◆ Selection of appropriate methods of propagation
- ◆ Selection of growing media/system
- ◆ Irrigation and management of nutrition
- ◆ Environment control
- ◆ Control of pests and diseases
- ◆ Appropriate management of plant growth
- ◆ Appropriate training/pruning to produce quality standard

Evidence Requirements

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

- ◆ plan the production of edible and non-edible protected crops:
 - select appropriate methods of propagation
 - select appropriate growing media/system
 - select appropriate approach to irrigation and nutrient management
 - describe appropriate methods of pest control
 - describe requirements for management of plant growth
 - describe requirements for training/pruning

Assessment Guidelines

This Outcome could be assessed by a report consisting of a suitable 'blue-print' production plan for an edible and a non-edible protected crop. The length of the report is less important than the plan contains enough information that could be practically applied to a cropping situation. In addition a brief explanation for the selection of the elements of the plan should be given to justify the final 'blue-print' produced.

The assessment for this Outcome could be combined with Outcome 1.

Administrative Information

Unit code: F1JJ 35
Unit title: Protected Crops
Superclass category: SD
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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

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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

This Unit aims to develop candidate skills in the planning of the production of Protected Crops. As well as the technical aspects of planning the propagation and growing on of plants, candidates will be introduced to the markets, the influences that affect demand for edible and non-edible crops and the quality standards that are required for selected crops. This should concentrate on UK production and the effects of competition from overseas producers.

An Integrated Crop Management approach to production should be encouraged in particular; crop protection, waste and pollution management, energy management, wildlife and landscape management, monitoring.

Outcome 1 introduces candidates to the main crops produced under protection in the UK. They will be shown how to find statistics for the market for protected crops and to identify trends in demand. Market share and competition from overseas producers will also be identified through the statistics. The grading of plants or produce will be investigated.

In Outcome 2 candidates will plan the production of an edible and a non-edible crop.

Substrate selection will cover the selection of appropriate growing media from the soil to Nutrient Film Techniques, taking into account the requirements for quality growth as well as the environmental impact of the materials used. Approaches to optimum crop nutrition will be covered and candidates will be able to select the type of fertiliser application rates and monitoring of nutrition through conductivity measurement or other methods. This will enable candidates to make a reasoned selection of appropriate growing method.

Irrigation will investigate sources of water, including consideration of environmental impact, reliability of quality and supply, volumes required depending on crop and irrigation method, methods of applying irrigation, recycling of water, use of irrigation to manage crop growth.

Candidates will investigate the management of the environment within the protective structure; temperature, light, CO₂, humidity for example.

Pest problems; pest and disease will look at the major problems in protected production. An integrated approach to pest control will be introduced to candidates that will form part of the overall production plan. The importance of good plant husbandry will be taught along with the role of pesticides, biological control and novel techniques like active composts.

Approaches to managing the growth of the crop; for example training techniques, de-leafing, dis-budding, growth regulation, appropriate to specific crops will be discussed.

Higher National Unit specification: support notes (cont)

Unit title: Protected Crops

Guidance on the delivery and assessment of this Unit

It is recommended that this Unit be taught through a series of lectures, which could be supplemented by practical classes. Practical classes could include visits to commercial growers.

Suitable approaches to generating evidence may include supplementing a student-centred written assignment with an oral explanation by the candidate.

For the teaching of the Outcome 1 the following references are recommended:

FAO — <http://faostat.fao.org/>

Defra — <http://statistics.defra.gov.uk/esg/publications/bhs/2005/default.asp>
<http://statistics.defra.gov.uk/esg/statnot/janglass.pdf>

SEERAD — <http://www.scotland.gov.uk/topics/statistics/15631/22883>

National Statistics On-line — <http://www.statistics.gov.uk/>

For the teaching of Outcome 2 the following references are recommended:

Ball Red Book, Glasshouse Growing
Grower Guides for Cut Flowers and Pot Plants
Holland Bulb Forcer's Guide

Opportunities for developing Core Skills

There may be opportunities to develop the Core Skills of *Communication* and *Problem Solving* at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Open learning

Elements of this Unit could be delivered by distance or flexible learning. Although it would be beneficial for the candidate to attend the centre for supervised assessment, this could be done in off-centre locations with appropriate arrangement.

Suitable approaches to generating evidence may include supplementing a student-centred written assignment with an oral explanation by the candidate.

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).

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Outcome 1 introduces the main crops produced under protection in the UK. You will be shown how to find statistics for the market for protected crops and to identify trends in demand. Market share and competition from overseas producers will also be identified through the statistics. The grading of plants or produce will be investigated.

In Outcome 2 you will plan the production of an edible and a non-edible crop.

Substrate selection will cover the selection of appropriate growing media from the soil to Nutrient Film Techniques, taking into account the requirements for quality growth as well as the environmental impact of the materials used. Approaches to optimum crop nutrition will be covered and you will be able to select the type of fertiliser application rates and monitoring of nutrition through conductivity measurement or other methods. This will enable you to make a reasoned selection of appropriate growing method.

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You will investigate the management of the environment within the protective structure; temperature, light, CO₂, humidity for example.

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