



## National Unit specification

### General information

**Unit title:** Primary Food Production: Horticulture

**Unit code:** H6RD 46

**Superclass:** NE

**Publication date:** February

**Source:** Scottish Qualifications Authority

**Version:** 01

### Unit purpose

This Unit is designed to enable learners to understand the basic biology of edible crops, the factors affecting their growth, the techniques required for growing them, their nutritional requirements and the pests and diseases that can affect them. Learners will have the opportunity to plant and grow their own edible crops, having produced a plan and considered the health and safety requirements. They will then be able to evaluate the success of their growing enterprise. The Unit is intended for learners who wish to work in horticulture and/or local food production.

### Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Describe key aspects of horticultural production.
- 2 Produce edible crops.
- 3 Evaluate success.

### Credit points and level

1.0 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6)

## National Unit specification: General information (cont)

**Unit title:** Primary Food Production: Horticulture

### Recommended entry to the Unit

While entry is at the discretion of the centre, learners would normally be expected to have attained one of the following, or equivalent:

- ◆ National 5 Biology
- ◆ NPA Crofting (SCQF level 5)
- ◆ Hospitality and Catering (SCQF level 5)
- ◆ Rural skills (SCQF level 5)

Learners taking this Unit do not need to have any prior knowledge of food production, however good practical and research skills would be an advantage.

### Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skill                      Problem Solving at SCQF level 5

Core Skill component                      None

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of the Unit Specifications for this Course.

### 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.

This Unit is included in the NPA in Local Food Production at SCQF level 6; however it can also be delivered as a free-standing Unit or as part of another relevant programme.

### Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## **National Unit specification: Statement of standards**

**Unit title:** Primary Food Production: Horticulture

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

### **Outcome 1**

Describe key aspects of horticultural production.

#### **Performance Criteria**

- (a) Describe the basic characteristics of edible crops
- (b) Identify key soil factors affecting edible crop growth
- (c) Describe the techniques required for planting and maintaining plants for horticultural production
- (d) Identify symptoms of common diseases and also common pests of edible crops and how to treat them
- (e) Describe the nutritional requirements of edible crops

### **Outcome 2**

Produce Edible Crops.

#### **Performance Criteria**

- (a) Produce a plan for the production of edible crops
- (b) Choose an appropriate site for production
- (c) Prepare the site for planting
- (d) Plant crops
- (e) Maintain the crops as necessary
- (f) Ensure all Health and Safety requirements are met

### **Outcome 3**

Evaluate success.

#### **Performance Criteria**

- (a) Review the production process in relation to the plan
- (b) Consider the success of the plant husbandry
- (c) Review the success of dealing with pests and diseases
- (d) Evaluate the growth and quality of the crop

## National Unit specification: Statement of standards (cont)

**Unit title:** Primary Food Production: Horticulture

### Evidence Requirements for this Unit

Evidence is required to demonstrate that learners have achieved all Outcomes and Performance Criteria.

#### Outcome 1

For Outcome 1 written and/or recorded oral evidence is required to demonstrate that the candidate can:

- (a) Describe the following basic characteristics of edible crops:
  - ◆ Structure of stems, roots, leaves, flowers, seeds and fruits
  - ◆ Photosynthesis
  - ◆ Sexual and asexual reproduction (to include three examples of each)
- (b) Identify a minimum of four soil factors and explain how they affect the growth of edible crops.
- (c) Describe:
  - ◆ propagation from seed for a minimum of two edible crops.
  - ◆ vegetative propagation for a minimum of two edible crops.
  - ◆ a minimum of four techniques for maintaining plants, to include applying fertiliser and watering.
- (d) Identify the symptoms and describe treatments for a minimum of three common diseases.
- (e) Identify a minimum of two pests and describe appropriate control measures.
- (f) Describe the nutritional requirements of edible crops with reference to:
  - ◆ Nitrogen (N)
  - ◆ Phosphorous (P)
  - ◆ Potassium (K)
  - ◆ Magnesium (Mg)

#### Outcome 2

Performance evidence supported by written and/or recorded oral evidence is required to demonstrate that the candidate can:

- (a) Produce a plan for the production of at least two edible crops.
- (b) Include a basic risk assessment.
- (c) Choose an appropriate site for production.
- (d) Prepare the site for planting.
- (e) Plant the chosen crops.
- (f) Maintain the crops as necessary including:
  - ◆ Regular checks for pests and diseases
  - ◆ Appropriate controls/treatments for pests and diseases
  - ◆ Ensure nutritional requirements are met
  - ◆ Keep accurate records
- (g) Comply with all relevant Health and Safety legislation with reference to the risk assessment.

## **National Unit specification: Statement of standards (cont)**

**Unit title:** Primary Food Production: Horticulture

### **Outcome 3**

Written and/or recorded oral evidence is required to demonstrate that the candidate can:

- (a) Review the production process in relation to the plan and highlight any changes to the plan including explanations.
- (b) Review the success of the plant husbandry.
- (c) Review the success of dealing with pest and disease issues, with reference to the pest and disease records and treatment records.
- (d) Evaluate the growth and quality of the crops, with reference to the records kept.
- (e) Reflect on the knowledge and skills developed.

The assessment for Outcome 3 should be based on the plan produced and practical work carried out in Outcome 2.

An integrated portfolio of evidence could be produced to provide evidence for all three Outcomes.



## National Unit Support Notes

**Unit title:** Primary Food Production: Horticulture

Unit Support Notes are offered as guidance and 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

Suggested topics and themes that could be covered in this Unit are given below for each Outcome.

**Outcome 1:** Describe the key aspects of horticultural production.

- (a) Describe the basic characteristics of edible crops:
- ◆ Only the basic characteristics of the plant structures is required, for example the presence and function of vascular tissue (xylem and phloem) in roots and stems, but no details of translocation in the phloem is required.
  - ◆ The importance of photosynthesis and an outline of the process only, but no biochemical detail is required.
  - ◆ Examples of edible crops which utilise sexual and asexual reproduction should be provided (eg sexual: tomato, peas, maize; asexual: potato, strawberry, onion).
- (b) Identify key soil factors affecting edible crop growth:
- ◆ The role of factors such as: organic content, soil structure, soil texture and drainage should be covered.
  - ◆ The beneficial effects of crop rotation and composting could also be considered.
- (c) Describe the techniques required for planting and maintaining plants for horticultural production:
- ◆ Seed propagation of different sizes of seeds could be described, or seeds requiring different conditions or treatments.
  - ◆ Vegetative propagation using different plant structures should be described (eg bulbs and tubers).
  - ◆ Learners should be able to describe at least four basic techniques for maintaining the growth of edible crops, such as watering, applying fertiliser (organic or artificial), weeding, pricking out, hardening off, thinning, protecting from wind.
- (d) Identify the symptoms and describe treatments for a minimum of three common diseases.
- (e) Identify a minimum of 2 pests and describe appropriate control measures:
- ◆ Symptoms and suitable treatment for diseases such as: blight, powdery mildew, damping off and leaf spot should be studied.
  - ◆ Pests and their control measures, such as: aphids, caterpillars, scale insects, slugs and snails should be studied.

## National Unit Support Notes (cont)

### Unit title: Primary Food Production: Horticulture

- (f) Describe the nutritional requirements of edible crops:
- ◆ The role of the following plant macronutrients should be described: nitrogen (N), phosphorous (P), potassium (K) and magnesium (Mg), and hence the nutritional requirements of crops.
  - ◆ There should be discussion about the need to analyse the soil in order to inform the fertilising regime as well as discussion about comparing the relative benefits of organic and artificial fertilisers.

#### Outcome 2: Produce Edible Crops.

- (a) Produce a plan for the production of edible crops:
- ◆ Learners should produce a detailed plan for the production of at least two edible crops, which should reflect the time available, the facilities available and the season(s) when the growing is to take place.
  - ◆ The scale of growing should also reflect the facilities and time available.
  - ◆ Whilst desirable, it will not be necessary to continue the growing to the natural end point of harvesting if the timing of the academic year does not allow this.
  - ◆ A risk assessment must be prepared by the learner and approved by the teacher/tutor.
- (b) Choose an appropriate site for production:
- ◆ The site will be dependent on the facilities available to the Centre, but should be suitable for the planned enterprise.
- (c) Prepare the site for planting:
- ◆ The site should be prepared appropriately for planting — this could involve the use of machinery which may be operated by someone other than the learner, but it should be done under the instructions of the learner according to the plan.
- (d) Plant crops:
- ◆ The chosen crops should be planted — this could also involve the use of machinery which may be operated by someone other than the learner, but it should be done under the instructions of the learner according to the plan.
- (e) Maintain the crops as necessary:
- ◆ The learners should carry out appropriate plant husbandry with the aim of maintaining optimum growing conditions for the crops, given the local circumstances. This might involve appropriate handling of seedlings and thinning and will involve regular checks for pests and diseases, followed by the appropriate treatments and application of the chosen fertiliser.
  - ◆ Accurate records should be kept throughout and photographs could be taken to provide a visual record of growth and development of the crops.
- (f) Ensure all Health and Safety requirements are met:
- ◆ The learners should follow the prepared risk assessment and must comply with all relevant Health and Safety legislation.

## National Unit Support Notes (cont)

**Unit title:** Primary Food Production: Horticulture

**Outcome 3:** Evaluate success

- (a) Review the production process in relation to the plan:
  - ◆ The learners should review the extent to which the production process adhered to the original plan.
  - ◆ It is to be expected that circumstances will have arisen that would have resulted in the plan being changed — these changes and the reasons for the change should be recorded and their success considered.
- (b) Consider the success of the plant husbandry:
  - ◆ The success of each process involved in the plant husbandry should be considered in relation to the Outcome achieved.
- (c) Review the success of dealing with pests and diseases:
  - ◆ A review of the success in dealing with any pests and diseases that affected the crops should be carried out by the learners.
- (d) Evaluate the growth and quality of the crop:
  - ◆ An assessment of the quality of the harvested crops, or alternatively an assessment of the standing crops should be made, if it was not possible to take the crops through to harvesting.
  - ◆ Measurements and photographs should be taken wherever possible.

### Guidance on approaches to delivery of this Unit

This is primarily a practical Unit which includes the preliminaries of planning and concludes with the evaluation of success. The practical work involves the growing of at least two edible, horticultural crops, which therefore includes any vegetable or soft fruit.

What is possible to achieve in terms of the growing will depend on the facilities that are available (eg, greenhouse, polytunnel, vegetable plots). However this Unit should only be undertaken if at the outset there is the potential for the learner to produce crops on a medium to large 'domestic' rather than 'commercial' scale. The facilities must also reflect the potential need for protected cropping depending on the local climatic conditions.

**Outcome 1** is intended to give a basic grounding in plant biology and to enable the learner to understand the processes taking place within the crop plants and also to understand the function of the horticultural techniques that are to be employed. Equally important is the need for the learners to understand the requirements that plants have of their external environment, particularly that of the soil. The soil 'factors' are fundamental to enabling a plant to not just survive, but to thrive and in the case of a crop plant to be productive in human terms. Learners therefore need to understand the role that soil plays and therefore to analyse the soil that they will use in order to assess what crops they can grow, or what they need to do with their soil, including applying fertiliser, to grow the crops of their choice.

A crop can be destroyed very rapidly by a pest or a disease and the learners therefore need to be able to recognise the symptoms of diseases and recognise pests and to know how to treat these problems effectively.



## National Unit Support Notes (cont)

### Unit title: Primary Food Production: Horticulture

This Outcome is likely to involve a mixture of practical activities and classroom research, preferably with the classroom element used to reinforce the lessons learnt in the field, rather than the other way around. The classroom activities could be a combination of teaching and guided research, with the potential for learners to feed back their findings to their peers.

In **Outcome 2**, learners have the opportunity to grow their chosen crops and to maintain them to achieve the best possible quality of crop. This will only be achieved if sufficient planning is carried out and the plans reflect the facilities and time that are available. The learners must therefore be fully conversant with the facilities that are available to them and also realistic about what they will be able to achieve.

Part of the plan must include a risk assessment of the activities that they will carry out and this should be approved by the Tutor, ensuring that it complies with all relevant health and safety regulations.

The preparation of the site may be done using machinery and this could be carried out by someone other than the learner (under instructions from the learner), for example if a plot were to be ploughed, however a garden rotovator could be used by the learner under appropriate supervision. The size of the site will be dependent on what is available, but must be at least on a medium to large 'domestic' scale.

The learners will plant their crops and manage them according to their plan, ensuring that they respond to the nutritional demands of the plants and also to any diseases or pests that may appear. It is important that they maintain detailed and accurate records throughout the growing period.

Ideally the crops will be taken through to harvesting, but this may not be possible because of the timing of the academic year. Clearly the choice of crop and the timing of planting will determine whether harvesting is a feasible possibility.

**Outcome 3** involves an evaluation of the growing process and there must be time available at the end of the Unit to allow for detailed evaluation to be undertaken.

The evaluation should provide an opportunity to reflect on the original plan and to review the extent to which the production process adhered to the original plan. Where changes were made, an explanation for the reasons behind them should be given. The learners should make reference to their records in order to evaluate the success of their husbandry, their use of fertiliser and the how they dealt with diseases and pests. Finally they must make an evaluation of the overall quality of their crops, whether that be the standing crops or the harvested crops.

## National Unit Support Notes (cont)

**Unit title:** Primary Food Production: Horticulture

### Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

**Outcome 1:** Describe the key aspects of horticultural production

The key aspects of horticultural production could be presented in separate reports or in a single report. The report(s) could be in the form of a written document, a detailed poster or a recorded oral presentation to the group.

**Outcome 2:** Produce Edible Crops

A Production Plan could be presented in the form of a written document. This will be followed through during the growing and will be referred to in the evaluation. Detailed records of planting and subsequent husbandry, including fertiliser application, pest and disease control measures must be presented as a working document.

**Outcome 3:** Evaluate success

The evaluation of the whole process could take the form of a written document, a detailed poster or a recorded oral presentation to the group.

Whatever form the reports take, they must reflect the level of the qualification at SCQF level 6.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

### Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

### Opportunities for developing Core and other essential skills

There is no automatic certification of Core Skills or Core Skills components in this Unit, however there may be opportunities to develop the Core Skills of *Communication*, *Numeracy*, *Information and Communication Technology (ICT)*, *Problem Solving* and *Working with Others* all at SCQF level 6.

## National Unit Support Notes (cont)

**Unit title:** Primary Food Production: Horticulture

The evidence generated for Outcome 1 and the planning aspect of Outcome 2 could provide opportunities to develop either the Written or Oral component of Communication and the Using Numbers component of *Numeracy*.

The research elements of Outcomes 1 and 2 could provide opportunities to develop the Core Skill of *ICT* (both Accessing Information and Providing/Creating Information components).

The practical elements of this Unit (Outcome 2) will provide opportunities to develop the Core Skills of *Problem Solving* and *Working with Others*.

In addition to the Core Skills noted above there may also be opportunities to develop other essential skills, especially in the context of this Unit, in Employability and Sustainable Development.

This Unit has the Core Skill of Problem Solving embedded in it, so when candidates achieve this Unit their Core Skills profile will be updated to show that they have achieved Problem Solving at SCQF Level 5.

## History of changes to Unit

Version	Description of change	Date

© Scottish Qualifications Authority 2014

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Business Development and Customer Support team, telephone 0303 333 0330.

## General information for learners

### Unit title: Primary Food Production: Horticulture

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is designed to provide you with the opportunity to undertake practical work in producing 2 horticultural crops, in order to help you to develop practical skills and knowledge for working in horticultural production.

In **Outcome 1** you will develop background knowledge in plant biology and the characteristics of edible crops, soil science and plant husbandry including pest and disease control and satisfying the nutritional requirements of crops. **Outcome 2** is essentially the practical component where you will plant and grow 2 crops, using appropriate husbandry techniques, having first prepared a detailed Production Plan. You will keep detailed and accurate records throughout the production process. In **Outcome 3** you will evaluate the success of the production, referring back to your original plan and using your records.

You will have the opportunity to carry out independent research throughout the Unit, particularly in **Outcome 1**, and then to report back your findings to your peers. The Unit will be assessed Outcome by Outcome and you will be required to produce separate reports to summarize your findings. The **Outcome 2** report will be in the form of a Production Plan, where you will outline how you will plant and grow your crops, and your detailed records of your actual production process. The **Outcome 3** report will be an evaluation of the process and will refer back to your original plan.

The reports could be in a variety of forms, for instance a written document, a detailed poster or a recorded oral presentation to the group. You will need to consider what would be the most appropriate format to convey your findings from each Outcome.