



Higher National Unit specification

General information for centres

Unit title: Arable Crop Production

Unit code: F1Y4 34

Unit purpose: This Unit is designed to provide candidates with knowledge and understanding of the production of cereal, oilseed and pulse crops and to develop candidate skills in the identification of crop growth stages. It is intended for candidates wishing to work in practical farming, farm management or the agricultural support industries.

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

- 1 Identify and explain the growth stages of arable crops.
- 2 Select and plan the production of an arable crop.

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: Access to the Unit will be at the discretion of the centre. There is no specialist prior knowledge required. However, it would be beneficial for candidates to have had relevant vocational work experience.

Core Skills: There are opportunities to develop the Core Skills of *Numeracy, Communication* and *Problem Solving* in this Unit at SCQF level 6, 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: Outcome 1 could be assessed by an identification test for which candidates, under supervised conditions and with reference to appropriate keys, identify and describe the growth stages of selected specimens of cereal, oilseed and pulse crops. Outcome 2 could be assessed by a crop production programme, in which candidates select a crop, variety and market for a specified situation and plan the establishment, nutrition, protection and harvest of that crop. The crop production programme must comply with current relevant legislation and show consideration for environmental protection.

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 and explain the growth stages of arable crops

Knowledge and/or Skills

- ◆ Cereal crops
- ◆ Oilseed crops
- ◆ Pulse crops
- ◆ Crop growth stages and development
- ◆ Growth stage keys

Evidence Requirements

Evidence for this Outcome will be generated by sampling. Where an item is sampled candidates will need to provide evidence to demonstrate their Knowledge and Skills by showing that they can, with reference to appropriate growth stage keys-

- ◆ identify and explain the growth stage of 15 out of 20 selected specimens of cereal, oilseed and pulse crops. This must include reproductive and vegetative growth stages and a minimum of three from each of the three categories (cereal, oilseed and pulse crops).

Evidence must be generated under supervised conditions. Prior to assessment the specimens must be unseen and a different sample of plant specimens chosen for each assessment. Candidates will be provided with appropriate growth stage keys but may not use textbooks, lecture notes/handouts or other material for the assessment.

Assessment Guidelines

This Outcome will be assessed by an identification test under supervised conditions, where candidates identify the growth stage of selected specimens of arable crops including cereal, oilseed and pulse crop plants. Fresh, live material should be used wherever possible. Where it is not possible to provide fresh material, eg due to time of year, then appropriately preserved specimens or colour photographs may be substituted.

Higher National Unit specification: statement of standards

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Outcome 2

Select and plan the production of an arable crop

Knowledge and/or Skills

- ◆ Field situation and conditions
- ◆ Crop varieties
- ◆ Crop markets
- ◆ Crop rotations
- ◆ Crop establishment
- ◆ Programme for crop nutrition
- ◆ Programme for crop protection
- ◆ Crop harvesting
- ◆ Crop storage
- ◆ Legislation and safety
- ◆ Environmental protection
- ◆ Nitrate Vulnerable Zones (NVZ)

Evidence Requirements

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

- ◆ assess field conditions (situation; climate; soil; previous crop)
- ◆ select, and justify the choice of, an appropriate cereal, oilseed or pulse crop for the specified field
- ◆ explain how the chosen crop fits into the intended rotation
- ◆ select, and justify the choice of, an appropriate variety and market for the chosen crop
- ◆ prepare a crop production programme which describes the operations and inputs required to produce the chosen crop in the specified field, referring to:
 - establishment (seedbed preparation; seed rate; sowing date and method)
 - crop nutrition (nitrogen, phosphate, potash and trace element requirements; timing and application rate(s) of inorganic fertilisers and/or organic manures; environmental precautions relating to nutrient applications)
 - crop protection (methods for the control of the main weeds, pests and diseases; precautions and procedures to comply with legislation relating to environmental protection and the safety of operators and members of the public)
 - crop harvesting and initial storage (harvesting method and timing; post-harvest storage)

The crop production programme should contain enough information for it to be applicable to a practical cropping situation.

Assessment Guidelines

The length and format for the crop production programme could vary depending on the crop chosen. Suitable approaches to generating evidence may include supplementing the report of the crop production plan with a presentation by the candidate.

Administrative Information

Unit code: F1Y4 34
Unit title: Arable Crop Production
Superclass category: SD
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Higher National Unit specification: support notes

Unit title: Arable Crop Production

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 aim of this Unit is to provide candidates with technical knowledge and understanding of the production and management of cereal, oilseed and pulse crops. The Unit is vocationally relevant to candidates of all land-based courses. It draws on and applies knowledge from complementary Units in soil management and plant protection. The underpinning knowledge and understanding gained in this Unit will be useful in Units such as F1JH 35 *Plant Protection: Integrated Approaches* and F2AX 35 *Crop Physiology and Breeding*.

Candidates will be introduced to the main cereal, oilseed and pulse crops in the UK, their soil and climatic requirements, markets and the quality standards required for these outlets. Species that might be covered include wheat, barley, oats, peas, beans, oilseed rape and linseed. The factors to consider when choosing a variety will also be considered.

Outcome 1 explains the basic pattern of plant growth and development, the growth stages of arable crops and their application in crop management.

Outcome 2 covers the main operations and inputs required for arable crop production. Candidates will consider the purposes of rotations and the factors that influence the choice of crop rotation. They will explore how field conditions, soil type and the previous crop influence crop establishment methods and candidates will examine operations for seedbed preparation, drilling dates and methods and seed rates. Emphasis will be placed on protecting the soil and minimising soil erosion. Knowledge of soil management will be applied to assess crop nutrient requirements, calculate applications of inorganic fertiliser(s) and/or organic manures and plan their timing. The importance of minimising nutrient losses and avoiding pollution of water courses will be stressed and candidates will be made aware of the regulations for nutrient management in Nitrate Vulnerable Zones. Knowledge of plant protection will be applied to identify the main weed, pest and disease risks and to plan approaches for their control. Candidates will be encouraged to consider integrated approaches to crop protection and husbandry. The importance of complying with legal requirements and maintaining crop and environmental safety will be emphasised.

Guidance on the delivery and assessment of this Unit

This Unit could be delivered as a series of lectures and tutorials supported by visits to local farms and by practical classes to develop skills in the use of keys to identify the growth stages of selected cereal, oilseed and pulse crops. Teaching approaches might also include the use of software packages and/or field plots allocated to groups of candidates for planning crop management. Candidates should be encouraged to research technical literature to gather information.

Higher National Unit specification: support notes (cont)

Unit title: Arable Crop Production

Opportunities for developing Core Skills

The assessment of Outcome 2 where candidates are given a specified field and required to describe a production programme for a selected crop will develop the Core Skill of *Problem Solving* at SCQF level 6. This Core Skill could be further reinforced by class exercises in, for example, crop and variety selection, choice of rotation and fertiliser requirements. Calculations of seed rates, fertiliser applications and crop protection inputs as class exercises and in the assessment of Outcome 2 may develop the Core Skill of *Numeracy* at SCQF level 6. Preparation of a clear crop production plan may further develop the Core Skill of *Communication* at SCQF level 6 if candidates submit a report or a presentation.

Open learning

This Unit could be delivered by distance learning, by a combination of real-time lectures delivered over the Internet, material posted on a VLE platform, CD ROMs and paper-based study resources. 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.

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: Arable Crop Production

You are studying a 1 credit HN Unit (8 SCQF credit points) at SCQF level 7 that is aimed at candidates undertaking a land-based qualification.

The Unit is designed to provide you with knowledge and understanding of the operations and inputs for the production of cereal, oilseed and pulse crops in the UK. The principles of crop production developed in this Unit are important if you wish to work in practical farming, farm management or the agricultural support industries, and also if you intend to continue your studies in agriculture or applied crop science and technology.

On completion of this Unit you should be able to:

- 1 Identify and explain the growth stages of arable crops.
- 2 Select and plan the production of an arable crop.

Outcome 1

In this Outcome you will learn how cereal, oilseed and pulse crops grow and develop, how standard systems are used to describe crop growth stages and how these are used by agronomists to specify the timing of field operations and crop inputs. In practical classes, or by examining images from web-based or paper-based learning materials you will develop skills in the use of keys to identify vegetative and reproductive growth stages of cereal, oilseed and pulse crops.

Outcome 2

In this Outcome you will be introduced to the main cereal, oilseed and pulse crops in the UK, their soil and climatic requirements and the main operations and inputs required for the production of these arable crops. The following aspects of crop production will be examined: assessment of field conditions, rotations, crop and variety selection, crop establishment, crop nutrition, crop protection, harvesting and initial storage. The importance of protecting the soil, complying with legal requirements and maintaining crop and environmental safety will be emphasised. You will also explore the main markets for cereal, oilseed and pulse crops and the quality standards required for these outlets.

In order to complete the Unit you will be required to achieve a satisfactory level of competence in the identification of crop growth stages. You will also be required to prepare a crop production programme for the production of an arable crop in which you select a crop, variety and market for a specified situation and plan the establishment, nutrition, protection and harvest of that crop.