

NextGen: HN unit specification

Principles of Crop Production (SCQF level 7)

Unit code: J102 47

SCQF level: 7 (32 SCQF credit points)

Valid from: August 2026

This unit specification provides detailed information about the unit to ensure consistent and transparent assessment year on year. It is for lecturers and assessors, and contains all the mandatory information you need to deliver and assess the unit.

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Unit purpose

This SCQF level 7 unit is suitable for learners studying agriculture or similar subject areas. It is a mandatory component of HNC Agriculture. Largely theory-based, it provides learners with the skills and knowledge required to sow, grow, protect and harvest arable, fodder and forage crops. It examines the theory underpinning the practical skills associated with field tasks, as well as the environmental considerations of crop production.

Entry requirements

Entry to this qualification is at your centre's discretion. Before they start the unit, learners would benefit from having completed Mathematics and English at National 5, or equivalent. We recommend that learners have also completed one or more of the following:

- two Highers, preferably including a science
- an NC or SVQ Agriculture at SCQF level 6, or a relevant, alternative subject
- relevant work experience

Unit outcomes

Learners who complete this unit can:

1. identify a range of crops, pests, weeds, diseases and crop disorders
2. describe the application of principles of crop production to specified crops
3. explain the effect of crop production on the environment and develop mitigation strategies, making reference to sustainability principles (social, economic and environmental) and the United Nations (UN) Sustainable Development Goals (SDGs)
4. describe the application of precision technology in a crop-production system

Evidence requirements

The unit is designed to be assessed through a portfolio of evidence generated across all learning outcomes.

To successfully achieve these outcomes, learners must provide the following evidence:

Outcome 1

Learners must:

- identify a range of relevant crop species at different growth stages
- identify a range of weeds, pests and diseases for relevant crop species

Note that the relevant species must include arable, grass and fodder crops.

Outcomes 2 and 3

Learners must

- apply the principles of crop production to produce annual cropping plans for both an arable and a grass or a fodder crop. These must include:
 - crop establishment, production, protection, harvesting and storage
 - an explanation of both environmental risks and climate change relevance
 - a relevant mitigation strategy
 - an explanation of what is involved in growing an arable, grass or fodder crop using sustainable principles and how this relates to at least two of the UN SDGs

You do not need to assess all sections for both cropping plans, but you must assess all sections for at least one crop.

Outcome 4

Learners must:

- select representative crop or field data
- analyse data in the context of precision agriculture
- apply the findings to a cropping or field-management scenario
- describe how to apply a precision technology in this scenario

You could assess outcome 4 by asking learners to produce a poster containing graphs and tables.

Knowledge and skills

Knowledge	Skills
Outcome 1 Learners should understand: - the scientific principles behind crop establishment, production, protection and harvesting including: - the characteristics of arable, fodder and grass species - the growth stages of arable, grass and fodder crops - how to identify pests, weeds and diseases in arable, grass and fodder crops (epidemiology)	Outcome 1 Learners can: - identify crop species and growth stages for arable, fodder and grass crops and list their characteristics - identify pests, weeds and diseases of arable, fodder and grass crops - identify the main plant nutrients
Outcome 2 Learners should understand: - how to plan farming activities to successfully produce a crop in a given scenario - how to justify decisions made in an agricultural setting, in scenarios that include descriptions of the following: - characteristics of varieties and mixtures - main nutrients and their purposes - soil characteristics in terms of physical and chemical properties - crop-protection methods, including precision techniques - crop-establishment techniques - crop harvest and storage, including precision methods (including grain, fodder and grass)	Outcome 2 Learners can: - select appropriate varieties or species - select and justify appropriate cultivation methods including: - recommending an appropriate fertiliser - selecting appropriate control measures for pest, weeds and disease - choosing suitable harvest and storage conditions

Knowledge	Skills
Outcome 3 Learners should understand: - the impact of crop production on the wider environment - how to develop mitigation strategies for environmental harms caused by crop production including: - the effect of cultivation: soil degradation - the effect of fertilisers: soil degradation, eutrophication (over enrichment), biodiversity - the effect of pesticides: biodiversity, soil degradation - climate change: links between farm activities and climate change, and the impact of changing climate on farms and crop production	Outcome 3 Learners can: - identify soil degradation caused by cultivation, including erosion - identify the effect of fertilisers on soil degradation, eutrophication and biodiversity - identify the effect of pesticides on biodiversity, water courses and soil degradation - identify and discuss the links between farm activities and climate change, and the impact of changing climate on farms and crop production
Outcome 4 Learners should understand: the potential and actual impact of precision technology in a crop-production system	Outcome 4 Learners can: - select crop and field data in a representative manner - interpret data using ideas around precision agriculture - apply findings from data collection and interpretation in a cropping scenario

Meta-skills

You must give learners opportunities to develop their meta-skills throughout this unit. We have suggested how to incorporate the most relevant ones into the unit content, but you may find other opportunities.

Throughout the unit, learners develop meta-skills to enhance their employability in the agriculture sector. Where possible you should deliver and assess the unit holistically, in accordance with the integrated nature of agriculture, so that learners gain and develop meta-skills throughout the unit.

Self-management

This includes focusing, integrity, adapting and initiative. The most relevant are:

- focusing:
 - developing strategies to maintain focus in different classroom situations, including traditional lecture sections, individual study time and group work, as well as during self-directed study to achieve desired results and meet deadlines
- adapting:
 - being flexible while working with others; learning about best practice or new systems; understanding how agricultural environments and decisions connect with and influence the wider world
- initiative:
 - justifying decisions and developing new strategies or mitigations during formative and assessed work; showing these skills during class and group discussions

Social intelligence

This includes communicating, feeling, collaborating and leading. The most relevant are:

- communicating:
 - developing communication skills, both written and oral; putting forward ideas during assessments and class work; communicating professionally with staff and peers to arrange meetings, explain absences and ask questions
- collaborating and leading:
 - participating in group activities facilitating strong peer-to-peer relationships

Innovation

This includes curiosity, creativity, sense-making and critical thinking. The most relevant are:

- curiosity:
 - exploring further research topics of interest; developing new interests through participation in class exercises, both practical and theoretical
- creativity:
 - exploring innovative and creative use of resources; reflecting on scenarios and considering how they might have done things differently, and thinking about whether this would have improved the outcome
- sense-making:
 - participating in activities throughout the year, involving data gathering and analysis, and using collected or provided information to apply learned concepts to real-world situations

- critical thinking:
 - making decisions during classroom-based activities, formative exercises and group work

Literacies

This unit provides opportunities to develop the following literacies.

Numeracy

Learners develop their numeracy skills by:

- working through necessary calculations prior to carrying out many agricultural activities, including sowing, fertilising, spraying and calculating yields
- analysing data they have collected or been given to draw conclusions and develop plans

Communication

Learners enhance their communication skills by:

- developing their writing, oral presentation and interpersonal skills during formative and assessed work, class exercises and group work

Digital

Learners improve their digital skills and computer literacy by:

- producing work in different formats, including written work, video and audio files submitted to online platforms
- using digital platforms to carry out research, and learning to select reliable and verifiable sources
- using widely-used programmes, such as word processing, spreadsheet and presentation software to produce evidence for assessment

Learning for Sustainability

Throughout this unit, you should encourage learners to develop their skills, knowledge and understanding of sustainability.

This includes:

- a general understanding of social, economic and environmental sustainability
- a general understanding of the United Nations Sustainable Development Goals (SDGs)
- a deeper understanding of subject-specific sustainability
- the confidence to apply the skills, knowledge, understanding and values they develop in the next stage of their life

Delivery of unit

If you deliver the unit as part of HNC Agriculture, you could integrate delivery and assessment with Professional Practice and Skills in Agriculture.

The amount of time you allocate to this unit is at your discretion. The notional delivery time is 160 hours.

Additional guidance

The guidance in this section is not mandatory.

Approaches to delivery and assessment

Learners acquire most of their knowledge for this unit in outcomes 1 and 3. For outcomes 2 and 4, they focus on applying this knowledge.

Identify a range of crops, pests, weeds diseases and disorders (outcome 1)

Suggested content

- characteristics of arable, fodder and grass species
- growth stages of arable, grass and fodder crops
- identification of pests, weeds and diseases in arable, grass and fodder crops (epidemiology)

Suggested evidence

You can assess identification aspects using short tests, which can include multiple-choice and short-answer questions.

Describe the application of principles of crop production to specified crops (outcome 2)

Suggested content

- main nutrients and their purposes
- soils: characterisation of physical and chemical properties
- crop-protection chemicals and nutrition techniques, including precision methods
- crop harvest and storage, including precision methods: grain, fodder and grass
- specified crops would normally include: cereals, oil seed rape, grass and fodder crops

Suggested evidence

You can use crop-production plans (portfolios) to assess learners' ability to use the knowledge they gain from outcomes 1 and 3 to address outcome 2.

Explain the effect of crop production on the environment and develop mitigation strategies (outcome 3)

Suggested content

- effect of cultivation: soil degradation
- effect of fertilisers: soil degradation, eutrophication, biodiversity
- effect of pesticides: biodiversity, soil degradation
- global change: links between farm activities and climate change, the impact of changing climate on farms and crop production

Suggested evidence

You can use crop-production plans (portfolios) to assess learners' ability to apply the knowledge they gain from outcomes 1 and 3 to address outcome 2. You can combine assessment for outcomes 2 and 3 by asking learners to produce crop production plans for both an arable and grass or fodder crop.

Describe the application of precision technology in a crop production system (outcome 4)

Suggested content

- importance of data for crop-production systems
- data-collection methods
- application and use of data
- variability of crop measurements within fields
- field trial data
- precision farming maps

Suggested evidence

You can assess outcome 4 through a project where learners collect farm data, input the data into a spreadsheet, and then interpret it and make suggestions. They can present this as a poster, oral presentation, video, podcast, report or suitable equivalent.

You can assess this outcome alongside outcome 4 of the Principles of Livestock Production unit.

Resources

Centres delivering this qualification must have suitably qualified staff for each of the subject components. Your centre should already have established processes to ensure staff are appropriately qualified to deliver in this subject area.

Assessors and internal verifiers must hold an industry and/or subject-specific qualification equivalent to the qualification. Centre staff should have relevant industry experience and be able to demonstrate industry-relevant CPD to maintain their subject-specific knowledge and skills.

Equality and inclusion

This unit is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

You must consider the needs of individual learners when planning learning experiences, selecting assessment methods or considering alternative evidence.

Guidance on assessment arrangements for disabled learners and those with additional support needs is available on the [assessment arrangements web page](#).

Information for learners

Principles of Crop Production (SCQF level 7)

This information explains:

- what the unit is about
- what you should know or be able to do before you start
- what you need to do during the unit
- opportunities for further learning and employment

Unit information

This unit gives you the knowledge and skills to help you to sow, grow, protect and harvest arable, fodder and forage crops. You learn the theory underpinning practical skills associated with field tasks, and develop an understanding of the legislative and environmental considerations associated with crop production.

Specifically, you learn to:

1. explain the scientific principles behind crop establishment, production, protection and harvesting
2. apply the principles of crop production to specified crops and scenarios, and record the reasons for their decisions
3. explain the effect of crop production on the environment and develop mitigation strategies, making reference to sustainability principles (social, economic and environmental) and the United Nations Sustainable Development Goals
4. describe the application of precision technology in a crop-production system

Prior knowledge and skills

Before you start the unit, you would find it helpful to have completed Mathematics and English at National 5, or equivalent. We also recommend that you have completed one or more of the following:

- two Highers, preferably including a science
- an NC or SVQ Agriculture at SCQF Level 6, or a relevant, alternative subject
- relevant work experience

You do not need any prior experience or understanding of crop-production systems to do the unit. If you study the Professional Practice and Skills in Agriculture unit at the same time, you can put much of the theory in this unit into practice.

Assessment

You can be assessed in a variety of ways. For outcome 1, it might be in the form of short tests, including short-answer or multiple-choice questions. For outcomes 2 and 3, you create a portfolio of annual crop-production plans for arable, grass and fodder crops. For outcome 4, you select real farm data, analyse that data, and then make suggestions based on your findings.

Future progression and employment

If you study this unit as part of HNC Agriculture, you may have the opportunity to progress to a HND or degree-level course in agriculture or a related subject. Alternatively, your skills and knowledge could lead to employment at an operational level on a farm as, for example, a stockperson, general farm worker or tractor operations worker.

Meta-skills

Throughout this unit, you develop meta-skills that are useful for the agriculture sector.

Meta-skills are transferable behaviours and abilities that help you adapt and succeed in life, study and work. There are three categories of meta-skills: self-management, social intelligence and innovation.

Self-management

You develop your self-management skills as you focus on your class work, adapt to other views and changing circumstances, and take the initiative to justify decisions and develop new strategies in group situations.

Social intelligence

You develop your social intelligence skills as you communicate your ideas to peers and teachers, and participate in group activities facilitating strong peer-to-peer relationships

Innovation

You develop your innovation skills as you explore research topics and new interests, explore innovative and creative use of resources; use collected or provided information to apply learned concepts to real-world situations; and make informed decisions.

Learning for Sustainability

Throughout this unit, you develop skills, knowledge and understanding of sustainability.

You learn about social, economic and environmental sustainability principles and how they relate to the agriculture sector. You also develop an understanding of the [United Nations Sustainable Development Goals](#).

Administrative information

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Superclass: SD

History of changes

Version	Description of change	Date

Please check [our website](#) to ensure you are using the most up-to-date version of this unit.

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