



National Unit specification: general information

Unit title: Forage Crop Production (SCQF level 6)

Unit code: H28N 12

Superclass: SD

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Summary

This Unit develops knowledge and skills in growing and managing forage crops in the UK and the key aspects of forage crop production and utilisation. Candidates will develop knowledge of a range of forage crops and will consider end uses and storage requirements.

This is an optional Unit within the National Certificate in Agriculture at SCQF level 6 but is also available as a free-standing Unit.

This Unit is suitable for candidates who have no previous knowledge in this area. Successful completion of this Unit may facilitate progression to further study or to employment.

Outcomes

- 1 Select varieties and mixtures of forage crops to meet the quality requirements for given end uses.
- 2 Produce an annual forage crop production programme in a range of systems.
- 3 Describe the operation of machinery for growing and harvesting forage crops.
- 4 Describe the principles of harvesting and storage of forage crops.

Recommended entry

Entry is at the discretion of the centre.

Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6*)

**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.*

General information (cont)

Unit title: Forage Crop Production (SCQF level 6)

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill None

Core Skill component Critical Thinking at SCQF level 5

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

National Unit specification: statement of standards

Unit title: Forage Crop Production (SCQF level 6)

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

Select varieties and mixtures of forage crops to meet the quality requirements for given end uses.

Performance Criteria

- (a) Identify the main forage crops in a given area and their end uses.
- (b) Identify the characteristics of crops for potential end uses.
- (c) Explain the main factors that influence crop quality for potential end uses.
- (d) Select varieties and mixtures for given end uses and markets.

Outcome 2

Produce an annual forage crop production programme for a range of crops.

Performance Criteria

- (a) Select a suitable seed variety and seed rate for a given situation.
- (b) Describe an appropriate crop establishment programme for a given situation.
- (c) Outline a suitable fertiliser policy during the growing season for a given situation.
- (d) Describe a suitable crop protection plan for a given situation.
- (e) Identify common weeds, pests, diseases and nutritional disorders.

Outcome 3

Describe the operation of machinery for growing and harvesting forage crops.

Performance Criteria

Identify a range of machinery for growing a crop in a given situation.

- (a) Describe the use, layout and operation of machinery for growing crops.
- (b) Identify a range of machinery for harvesting a crop in a given situation.
- (c) Describe the use, layout and operation of machinery for harvesting crops.

National Unit specification: statement of standards (cont)

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Outcome 4

Describe the principles of harvesting and storage of forage crops.

Performance Criteria

- (a) Explain the factors to be taken into account when determining whether to start harvesting and grazing forage crops.
- (b) Describe suitable methods of harvesting and grazing forage crops.
- (c) Explain a range of forage crop preservation techniques.
- (d) Describe the methods and conditions for storing harvested forage crops.

Evidence Requirements for this Unit

Written and/or oral recorded evidence is required to demonstrate that the candidates have achieved all of the Outcomes and Performance Criteria. Evidence must be obtained under supervised conditions at appropriate points throughout the Unit. Evidence can be holistic or Outcome by Outcome.

For Outcome 1, candidates must provide evidence of the following in closed-book conditions:

- ◆ identification of at least four of the following forage crops, their characteristics for feeding to farm livestock, and one end use for each:
 - maize silage
 - whole crop
 - arable silage
 - turnips
 - kale
 - grass silage
 - fodder beet
 - swedes
 - forage rape
- ◆ explanation of how seed variety and fertiliser levels influence crop quality.
- ◆ selection of four varieties of seed for four different end uses/markets, with justification for the selection.

For Outcome 2, candidates must prepare a minimum of two written crop production plans in open-book conditions, one for a grass or cereal based crop and one for a brassica crop. Each plan must describe the required operations and inputs to produce the crop in a specified field, to include:

- ◆ suitable seed selection and seed rate.
- ◆ an appropriate crop establishment programme.
- ◆ a suitable fertiliser policy during the growing season.
- ◆ a suitable crop protection plan.
- ◆ identification of four common weeds, four pests, four diseases and three nutritional disorders which are likely to occur.

National Unit specification: statement of standards (cont)

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For Outcome 3, candidates must provide evidence of the following in open-book conditions:

- ◆ identification of the following items of machinery for growing crops and description of their use, layout and operation: cultivator, drill, roller, fertiliser sprayer.
- ◆ identification of the following items of machinery for harvesting crops, and description of their use, layout and operation: mowers, tedders, balers, wrappers, harvesters, transportation and storage equipment.

For Outcome 4, candidates must provide evidence of the following in closed-book conditions:

- ◆ explanation of factors to be taken into account to include growth stage, weather and ground conditions.
- ◆ description of preservation techniques to include ensiling in clamps and bales and brassica storage.
- ◆ description of methods and conditions to include: airtight and vermin control.

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 is an optional Unit within the National Certificate in Agriculture at SCQF level 6, but is also available as a free-standing Unit.

In this Unit, candidates are required to investigate the uses for which each forage crop may be grown. Candidates will also learn about the methods of growing and managing a range of forage crops, including the harvesting, preservation and storage needs of these crops.

This Unit should prepare candidates for progression to Higher National Units, Scottish Vocational Qualifications or other related land-based qualifications.

Outcome 1

Candidates should be taught about the identification, characteristics and factors that affect the quality of the following:

- ◆ Maize silage
- ◆ Whole crop
- ◆ Arable silage
- ◆ Turnips
- ◆ Kale
- ◆ Grass silage
- ◆ Fodder beet
- ◆ Swedes
- ◆ Forage rape

Candidates will learn the main characteristics required in crops for them to be put to certain uses and how to develop certain characteristics in a crop. They will also identify suitable varieties for different end uses when grown in a range of farms.

Outcome 2

Candidates will choose how crops fit into the intended whole farm rotation and provide reasons for choosing appropriate forage crops for different classes of livestock. They will learn about establishment techniques in seedbed preparation including choice of seed rate and sowing date. They will produce fertiliser plans including nitrogen, phosphate and potash requirements and timing and application rate(s). They will also produce a crop protection plan describing methods for the control of common weeds, pests and diseases.

National Unit specification: support notes (cont)

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Candidates will learn about the effect of rotations on crop yield and quality and also soil structure and fertility as well as key growth stages for crops. They will be able to calculate fertiliser requirements for producing combinable crops and make recommendations about fertiliser types, rates and timing to be used. They will also learn about the main weeds, pests and diseases that affect the range of crops being covered as well as when and how to control the effect of weeds, pests and diseases on the range of crops.

Outcome 3

Candidates will investigate how cultivator, drill, roller, fertiliser sprayers operate and their effect on the operations being carried out, particularly on the yield and quality of the crop being produced. This will be done through the use of field visits, practical demonstrations, examination of machines, manufacturers' literature, websites and books to develop knowledge of equipment for growing and harvesting a range of forage crops.

Outcome 4

Candidates will participate in discussion relating to the condition of crops when ready for harvesting, and the issues associated with early or delayed harvesting. They will investigate systems for the preservation and storage of crops, including clamps, wrapped bales, pits and ag bags. They will know when a crop is ready for harvest by growth stage, weather, ground conditions and general look and feel. They will also learn different harvest timings for a range of crops and the effect of early or delayed harvesting, the risks associated with the timing of harvest. Candidates will be able to explain a range of forage crop preservation techniques including ensiling and bulk storage (eg Swedes, Fodder Beet). They will also learn a range of storage systems and how to prepare them for harvest, including how to control pests and vermin.

This Unit is broadly aligned to the following National Occupational Standards (NOS) Lantra:

- AgC5 Prepare for planting and plant extensive crops
- AgC6 Monitor and maintain the healthy growth of extensive crops
- AgC9 Prepare, monitor and cultivate sites for planting
- AgC12 Control the harvesting of extensive crops by mechanical means
- AgC13 Monitor and maintain the storage of harvested crops

Guidance on learning and teaching approaches for this Unit

This Unit should be delivered in as practical a context as possible with delivery taking place both in the field to investigate various crops, cultivation, planting, harvesting and storage equipment/facilities and in a classroom/workshop setting for example to carry out inspections, repairs and maintenance of equipment. The emphasis should always be on the practical application of knowledge and understanding.

Candidates would benefit from a balanced approach to learning by undertaking field visits to farms growing a range of forage crops and participating in classroom activities to develop crop production, harvesting and storage knowledge and understanding. Working in small groups during workshop practical sessions will help understanding of equipment design and operation.

National Unit specification: support notes (cont)

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Outcomes 1 and 2 the use of field visits, samples, crop quality analysis sheets and pictures as required, is encouraged.

Outcome 3: the use of field visits, practical demonstrations, examination of machines, manufacturers' literature, websites and books is encouraged.

Outcome 4: the use of field visits, examination of websites, and farm records is encouraged.

This Unit should provide candidates with opportunities to develop the following essential skills for life, learning and work:

- ◆ Employability — through developing practical skills to industry standards and working on time limited tasks.
- ◆ Sustainability — through considering the use of resources, fertilisers, pesticides, etc.
- ◆ Technical skills — through investigations into the use and maintenance of equipment.
- ◆ Organisational skills — in terms of personal management through punctuality, record keeping.
- ◆ Interpersonal skills — through contact with farm staff, supervisors and class teams.

Guidance on approaches to assessment for this Unit

The following approaches to assessment are suggested.

Outcome 1: Identification and short answer questions.

Outcome 2: Candidates could gather evidence for each programme in a portfolio to include their web research, information from farm records, Gantt charts for timings and operations, fertiliser companies' recommendations, photographic images of weeds, pests and disorders. An assessor checklist could be used.

Outcome 3: Researching information on machinery from manufacturers' catalogues; machinery handbooks and web sources. An assessor checklist could be used.

Outcome 4: Restricted response or short answer questions could be used.

Opportunities for the use of 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 e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

National Unit specification: support notes (cont)

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Opportunities for developing Core Skills

In this Unit candidates will learn about forage crop production, storage and use, develop knowledge of the main forage crops, consider how to choose seed varieties/mixtures, learn how to plan and monitor the growth and harvesting and storage of forage crops.

Candidates will justify the selection of crops for given situations, identify solutions to growing and harvesting problems and calculate seed and fertiliser requirements. This means that as candidates are doing this Unit they may develop aspects of the Core Skills of *Communication, Problem Solving* and *Numeracy*.

In addition, aspects of the following Core Skills could be developed when particular learning and teaching approaches are adopted:

- ◆ *Working with Others* — through group work to collect data for eg crop evaluation
- ◆ *ICT* — through electronic recording of data and web research

This Unit has the Critical Thinking component of Problem Solving embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 5.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date
02	Clarification of Outcome 2 on page 1 and 3.	29/09/2012

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