## Higher National Unit specification

## General information for centres

**Unit title:** Pasture Management

**Unit code:** F1YB 35

**Unit purpose:** This Unit is designed to provide candidates with detailed knowledge of pasture management, allowing them to evaluate how grassland is managed in a particular way for efficient utilisation by considering the basic plant physiology. On completion of the Unit the candidate will be able to:

1 Evaluate the management of grazed grass.
2 Evaluate the production of grass silage and its value as a feed for livestock.
3 Evaluate the factors determining hill farming systems.

**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:** While entry to this Unit will be at the discretion of the centre, it would be beneficial if candidates had previously completed the Higher National Unit F1Y9 34 *Grass and Fodder Crop Production*.

**Core Skills:** There are opportunities to develop the Core Skill components of *Problem Solving* (Critical Thinking), *Problem Solving* (Planning and Organising) and *Communication* (Written Communication) 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:** The Unit may be assessed holistically as one case study to include Outcome 1, Outcome 2 and Outcome 3. Alternatively this could be broken down into two case studies, with one covering Outcomes 1 and 2 and the other covering Outcome 3.

A closed-book restricted response test or an assignment could be used to assess the plant physiology and growth aspects of the first Outcome, with the remainder jointly covered in a case study for Outcome 2 and/or Outcome 3.

# Higher National Unit specification: statement of standards

## Unit title: Pasture Management

## Unit code: F1YB 35

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

Evaluate the management of grazed grass

### Knowledge and/or Skills

- Physiological principles of grass growth
- Utilisation of grass
- Grazing systems

### Evidence Requirements

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

- evaluate the management and utilisation of grass through grazing from the physiological principles of grass growth at a plant level (covering canopy turnover, leaf growth and senescence, leaf area index targets, tiller density and size, vegetative and reproductive growth of tillers)
- evaluate a grazing system (extended grazing, grass/clover based sward, organic, high forage, low forage high concentrate system or upland/hill system) in relation to efficiency of grazing (covering sward surface height, herbage mass, stocking rates, grazing pressure, grazing systems, buffer grazing, buffer feeding, seasonality of fertiliser use, supplementation at grass and integration of cutting with grazing) for one species of livestock (beef, sheep, diary cows, goats, deer or horses)

### Assessment Guidelines

This Outcome could be assessed as a closed-book restricted response test or assignment for the physiology of growth. A case study could be used for the grazing system assessment, with the management specified and evaluated for one specific system for one species of livestock. The case study could also incorporate Outcome 2.

## Higher National Unit specification: statement of standards (cont)

## Unit title: Pasture Management

## Outcome 2

Evaluate the production of grass silage and its value as a feed for livestock

### Knowledge and/or Skills

- Chemical characteristics of silage
- Feeding value characteristics
- Fermentation characteristics
- Livestock nutritional requirements
- Livestock classes

### Evidence Requirements

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

- evaluate a chemical silage analysis with respect to feeding and fermentation quality

The evaluation of the chemical silage analysis must cover D-value, M.E., Protein, Sugar, Volatile Fatty Acids and must interpret how these would affect the quality of the silage as a feed for two specific livestock classes.

describe the chemical characteristics which determine quality of silage, and evaluate how the procedures carried out within silage making enhance conditions for fermentation and produce high feeding quality silage, including an explanation for the effect of each of the following factors:

- grass species
- fertiliser timing and quantity
- cutting dates and interval
- addititives

### Assessment Guidelines

This Outcome could be assessed as an open-book assignment in which candidates are provided with a chemical silage analysis for which they interpret the characteristics and explain how these would have been affected by the procedures of the silage production. Candidates would then evaluate the suitability for two given livestock classes. Alternatively, this Outcome could be incorporated into the case study for Outcome 1.

## Higher National Unit specification: statement of standards (cont)

## Unit title: Pasture Management

## Outcome 3

Evaluate the factors determining hill farming systems

### Knowledge and/or Skills

- Livestock systems
- Non Farming systems
- Environmental constraints
- Botanical constraints
- Economic constraints
- Diversification potentials
- Governmental policy constraints
- Effects of hill farming systems on the landscape

### Evidence Requirements

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

- evaluate the effect of soil, climate and vegetation on the livestock system (covering livestock species, stocking rate, productivity) or non farming system (covering forestation, tourism, recreation) being carried out on a hill farm.
- evaluate the effect that the designation of national parks, environmentally sensitive areas and sites of special scientific interest could have on the system.
- evaluate how EU and UK support mechanisms within less favoured areas help prevent rural depopulation.
- evaluate how a hill farming system affects the landscape. This must cover; selective grazing between livestock species and the resulting plant communities, the effect of the level of extensification on plant communities and non farming activities and their effects on the rural landscape.

### Assessment Guidelines

This Outcome may be assessed by a case study or assignment in which candidates evaluate a given hill farm by taking into account the constraints for that farm, evaluating the existing farming system and making justified suggestions for potential alternative systems.

## Administrative Information

**Unit code:** F1YB 35

**Unit title:** Pasture Management

**Superclass category:** SD

**Original date of publication:** August 2008

**Version:** 01

**History of Changes:**

| Version | Description of change | Date |
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**Source:** SQA



SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

# Higher National Unit specification: support notes

## Unit title: Pasture Management

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 is designed to explain why the production and utilisation procedures are carried out through the plant physiology principles.

In the first Outcome, candidates may develop knowledge of leaf growth, leaf area index, dry matter assimilation, leaf senescence, carbon balance within canopy, tiller production and turnover and reproductive growth. This may allow for an evaluation of the management of sward surface height or herbage mass targets for grazing livestock. The effect of grazing pressure on the grass quality can also be explained through vegetative and reproductive growth patterns during the season.

In the second Outcome, candidates may evaluate the production of high quality silage, covering the factors associated with good fermentation — sugar levels due to species/mixtures, fertiliser quantity and timing, stage of grass growth, climate at cutting, dry matter content, suitable additives, speed of filling, consolidation and covering. Candidates will learn about the chemical characteristics and range which would indicate a high quality silage — D-value, M.E., sugar, protein, NDF, and intake factor and also about VFA profile, pH and ammonia which indicate fermentation characteristics. Candidates may learn that the nutritional requirements of a different class of livestock should be matched with a high quality silage. Livestock classes may include for example, lactating dairy and suckler cows, finishing beef, store cattle, dry cows, pregnant ewes or finishing lambs.

In the third Outcome, hill farming systems and their impact on the landscape could be evaluated. This will cover the constraints on hill farming systems — soils/climate/vegetation and how these determine the system operated. Livestock systems of sheep, cattle, deer, and goats could all be covered together with non farming systems (eg forestation, wind or hydro power, recreational facilities). Candidates could develop an understanding of how EU support affects the economic viability and helps reduce rural depopulation of the uplands. The constraints of designating hill farms within a specialised category is also be evaluated eg national park, environmentally sensitive area etc.

## Guidance on the delivery and assessment of this Unit

The delivery of this Unit could take the form of a mixture of lectures, field visits and centre-based learning. Where appropriate, case studies could be on visited farms in order to enhance the appreciation and evaluation of the systems. Visits to any farms allow for a greater understanding of applying the theory into practice, since the practical application can be seen.

***Opportunities for developing Core Skills***

The use of case studies within these Outcomes, in which candidates are given the resources and asked to evaluate the management system for grass and livestock could offer opportunities to develop Core Skills in the area of *Problem Solving*. The components of Planning and Organising and Critical Thinking will be required at a high level when dealing with such complex issues as grazing system efficiency and interpreting chemical silage analyses and could be developed to SCQF level 6.

There are also opportunities to develop *Communication* (Written) to SCQF level 6, with candidates having to produce well-structured responses on complex topics such as prevention of rural depopulation, and when asked to discuss the relationship between procedures and physiological principles.

## Open learning

The Unit could be delivered by blended learning with Outcome 1, 2 and 3 delivered via distance learning in addition to some farm visits.

## 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:** Pasture Management

This Unit is designed to allow you to be able to evaluate how grassland is managed in a particular way for efficient utilisation by considering the basic plant physiology. Plant physiology principles underpin the procedures carried out within the system management and therefore you may be able to evaluate from first principles, how efficiently a particular system is being managed for both grazing and silage.

In the first Outcome you may develop knowledge of leaf growth, leaf area index, dry matter assimilation, leaf senescence, carbon balance within canopy, tiller production and turnover and reproductive growth. This may allow for an evaluation of the management of pastures for grazing livestock. The effect of grazing pressure on the grass quality can also be explained through vegetative and reproductive growth patterns during the season.

In the second Outcome you may gain the ability to interpret a chemical silage analysis and to use this to determine the quality of silage, and its suitability as a feed for specific livestock classes. You may also be able to explain and evaluate the procedures required to produce high quality silage.

You may study the factors associated with good fermentation — sugar levels due to species/mixtures, fertiliser quantity and timing, stage of grass growth, climate at cutting, dry matter content, suitable additives, speed of filling, consolidation and covering. You may learn about the chemical characteristics and range which would indicate a high quality of silage — D-value, M.E., sugar, protein, NDF, and intake factor and also about VFA profile, pH and ammonia which indicate fermentation characteristics. You may learn that the nutritional requirements of a different class of livestock should be matched with high quality silage.

In the third Outcome you may evaluate a hill farming system, taking into account any relevant constraints, with their effect on the landscape and suggest and justify alternative systems.

Whilst looking at hill farming systems you may learn about soils/climate/vegetation and how these determine the system operated. You may study how support from the European Union affects economic viability and helps reduce rural depopulation of the uplands. The constraints of designating hill farms within a specialised category may also be evaluated eg a national park.