



Higher National Unit specification

General information for centres

Unit title: Farm Manures, Wastes and the Environment

Unit code: F1Y7 35

Unit purpose: This Unit is designed to enable candidates to develop the Knowledge and Skills to enable effective management of animal manures especially with regard to the principles of responsible environmental protection. Candidates will become familiar with the issue of farm wastes in the environment, how waste materials are classified and controlled in the UK context and the terminology used to describe polluting materials. Candidates will however, become especially knowledgeable and skilled in the minimisation, handling and effective use of animal manures. They will prepare an outline waste management plan in accordance with good environmental practice and the ability to incorporate animal manures into crop nutrition plans consistent with legislative constraints and the demands of good crop husbandry.

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

- 1 Explain the causes and effects of pollution and the principles of pollution avoidance.
- 2 Explain the regulatory regime and the measures adopted in the UK to protect the environment from adverse agricultural activity.
- 3 Evaluate the options for managing selected farm pollutants that conform to good agricultural practice.
- 4 Prepare an outline Farm Waste Management Plan (FWMP).

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: Access to this Unit is at the discretion of the centre. It is recommended that candidates have a good working knowledge of agriculture. An appreciation of crop nutrition and in particular livestock production systems is required. This may be evidenced by possession of F2ED 34 *Livestock Production Systems*, and either F1Y4 34 *Arable Crop Protection* or F1Y9 34 *Grass and Fodder Crop Production*.

Core Skills: There are opportunities in this Unit to develop the Core Skills of *Numeracy*, *Communication* and *Problem Solving* at level SCQF level 6, although there is no automatic certification of Core Skills or Core Skills components.

General information for centres (cont)

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: There are two assessments for this Unit. A closed-book assessment may be used to assess Outcomes 1 and 2. A report completed as an open-book exercise could be used to assess Outcomes 3 and 4 as these Outcomes are concerned with the candidate's ability to synthesise a waste management plan for a specific site.

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

Explain the causes and effects of pollution and the principles of pollution avoidance

Knowledge and/or Skills

- ◆ Terminology applied to pollutants
- ◆ Sources of pollutants
- ◆ Effects of pollution
- ◆ Principles of pollution avoidance

Evidence Requirements

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

- ◆ two mechanisms by which each of soil, groundwater and airborne pollution may arise using relevant scientific terminology
- ◆ two significant effects of two contrasting pollutants in the environment using appropriate terminology
- ◆ the minimisation of pollution risk through consideration of the source, pathway and receptor

Assessment Guidelines

See Outcome 2.

Higher National Unit specification: statement of standards (cont)

Unit title: Farm Manures, Wastes and the Environment

Outcome 2

Explain the regulatory regime and the measures adopted in the UK to protect the environment from adverse agricultural activity

Knowledge and/or Skills

- ◆ Regulatory framework
- ◆ Statutory bodies
- ◆ Common Agricultural Policy

Evidence Requirements

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

- ◆ outline the provisions of the Directives, Acts and Regulations relative to land-based diffuse and point source pollution
- ◆ explain the role of the Statutory Body for environmental protection with regard to land-based pollution related Directives and agricultural activity
- ◆ explain the impact of agricultural policy on good practice with regard to agricultural land management and diffuse pollution

Assessment Guidelines

This Outcome may be assessed with Outcome 1. It is recommended that the combined assessment consists of approximately 20 short answer questions answered under closed-book conditions.

Higher National Unit specification: statement of standards (cont)

Unit title: Farm Manures, Wastes and the Environment

Outcome 3

Evaluate the options for managing selected farm pollutants that conform to good agricultural practice

Knowledge and/or Skills

- ◆ Mitigation measures
- ◆ Codes of Practice
- ◆ Handling and Disposal
- ◆ UK and EU Health and Safety Regulations

Evidence Requirements

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

- ◆ evaluate the pollution mitigation measures appropriate to the handling, storage and the use or disposal, of any three of the farm pollutants noted below in accordance with best management practice, relevant legislation and the Code of Practice:
 - spent sheep dip
 - fuel oil
 - fallen stock
 - plastics and tyres
 - scrap vehicles

Assessment Guidelines

See Outcome 4.

Higher National Unit specification: statement of standards (cont)

Unit title: Farm Manures, Wastes and the Environment

Outcome 4

Prepare an outline Farm Waste Management Plan (FWMP)

Knowledge and/or Skills

- ◆ Quantities and qualities of animal manures
- ◆ Field data
- ◆ FWMP parameters and constraints
- ◆ Fertiliser and manure planning
- ◆ Handling, storage and distribution of animal manures
- ◆ UK and EU Health and Safety Regulations

Evidence Requirements

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

- ◆ collate and analyse livestock and field data relevant to a FWMP
- ◆ plan the use or disposal of animal manures with consideration of the fertiliser value, and in accordance with current regulations and best practice
- ◆ appraise the manure storage and machinery requirements to achieve the FWMP objectives

Assessment Guidelines

It is recommended that the assessment for this Outcome includes the assessment for Outcome 3. It is suggested that assessment is a project report. It is recommended that the project scenario is based on a visit to a working mixed farm incorporating application of animal manures to cropped areas, where the candidate considers the validity of the farm's waste management system and considers three of the farm pollutants identified in Outcome 3. The report may be about 1,500 words (including the material for Outcome 3) plus supporting numerical analytical data and diagrams.

Administrative Information

Unit code: F1Y7 35

Unit title: Farm Manures, Wastes and the Environment

Superclass category: SC

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Higher National Unit specification: support notes

Unit title: Farm Manures, Wastes and the Environment

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

A major consideration for livestock farmers is the handling, and use of animal manures, in particular slurry. As the largest source of agricultural pollution, there are many carrot and stick measures in place to bring about efficient use of such animal manures. This is especially true in Nitrate Vulnerable Zones where there is a requirement to match manure application to crop utilisation. This module aims to introduce the candidate to principles of pollution avoidance (and 'good neighbourliness'), to the regulatory and enforcement regimes, to the codes of practice that promulgate least worst methods, and to the range of mitigation measures that can be applied to the most significant of agricultural pollutants.

Outcome 1 considers the pertinent general principles. Candidates should know and understand the significance of terms such as BOD, TSS, bacterial count and relate these to common agricultural pollutants especially materials of an organic origin. The effects on soils water, air and living matter of the principal pollutants should be appreciated and hence the need for audits, minimisation strategies, and engineering controls should be established.

This links very closely to Outcome 2 in which the regulatory and policy regime applicable to agri-wastes is investigated. Consideration should be given to the relevant EU Directives, UK Acts of Parliament, Regulations, and General Binding Rules and the role of significant bodies such as the Scottish Environment Protection Agency should be made clear. The significance of the cross-compliance elements of the Common Agricultural Policy, with GAEC requirements and the PEPFAA Code and the 4-Point Plan should be understood.

Outcome 3 looks at the most significant of agricultural pollutants and the way in which farms can minimise the risks of environmental damage through application of the least damaging strategy. The Outcome focuses on pollutants other than slurry and FYM to give a balanced approach to the Unit.

The final Outcome 4 looks in detail (particularly) at slurry and considers its use as a crop fertiliser and the practical problems of phasing — of its production on the one hand, and when it can be applied to crops on the other. It will be necessary to explore the features of buildings and machines to contain, collect, handle, pump, store, and spread slurry and other animal manures. Consideration of capacities and workrates and field data such as slopes, rainfall, soil type, and cropping will all need to be taken into account to produce a workable plan for animal manures and fertilisers.

Higher National Unit specification: support notes (cont)

Unit title: Farm Manures, Wastes and the Environment

Guidance on the delivery and assessment of this Unit

It suggested this Unit is tackled variously from the point of view of the general public, the regulator, and the farmer. Consider what each segment of society wishes to see and hence derive the principles of prevention of pollution from agricultural activity and the range of incentives and penalties that exist. Otherwise the Unit can descend into a disheartening list of do's and don'ts. The aim must be to get candidates to see for themselves that it is important to do things contained in the Codes of Practice because it is the right thing to do rather than view them as yet more regulation to be complied with. Application of these codes to the very practical problem of dealing with slurry illustrates how important good records are.

For the project report for Outcomes 3 and 4 it is recommended that the candidates visit a real farm to gather the data. They should consider the production systems in place and use this to determine a valid Farm Waste Management Plan that takes account of the actual situation and condition of the farm. If the farm is not in a Nitrate Vulnerable Zone then it is recommended that the candidates consider how their plan would change if it were, as it important for the candidates to consider nutrient budgeting and fertiliser planning.

Opportunities for developing Core Skills

As the project requires both collection, collation, analysis and interpretation of data to produce a plan there is ample opportunity to gather evidence towards all aspects of the Core Skill of *Problem Solving*, but in particular the Planning and Organising element will be well served.

Assessment of this Unit may allow candidates to develop the Using Number component of the Core Skill *Numeracy* at SCQF level 6. Candidates in Outcome 4 may have opportunities to solve problems using numerical or statistical concepts. The general skill that candidates may have to complete is 'Apply in combination a wide range of numerical, statistical and other mathematical skills to process complex information in generalised contexts'. In addition Outcome 4 may provide the candidate to develop the Using Graphical Information component of the Core Skill *Numeracy* at SCQF level 6. Candidates may be asked to identify significant features in graphical information. The general skill that candidates may develop is 'apply a wide range of graphical skills to interpret and present complex information in generalised contexts.'

There are opportunities for the candidate to develop Written Communication at SCQF level 6 in the assessment of all Outcomes. In particular if candidates complete a report for Outcomes 3 and 4 they will an opportunity to develop the general skill 'Produce well structured written communication on complex topics'. Candidates when completing their report will have to present essential ideas/information and supporting detail in a logical and effective order.

Open learning

This Unit would be suitable for distance learning. Centres may require some planning for assessment of Outcomes 3 and 4 as it would be beneficial to have access to a working farm with livestock for the report.

Higher National Unit specification: support notes (cont)

Unit title: Farm Manures, Wastes and the Environment

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: Farm Manures, Wastes and the Environment

A major consideration for livestock farmers is the handling, and use of animal manures, and in particular slurry. Slurry is responsible for much agricultural pollution especially of watercourses, and consequently there are many incentives and penalties in place to bring about efficient use of such animal manures. This is especially true in Nitrate Vulnerable Zones where there is a requirement to match manure application to crop utilisation. This Unit aims to introduce you to principles of pollution avoidance (and ‘good neighbourliness’), to the regulatory and enforcement regimes, to the codes of practice for farmers, and to the range of mitigation measures that can be applied to the most significant of agricultural pollutants. In this Unit you will learn about the most environmentally sustainable ways of dealing with the most common pollutants on farms and become familiar with the terminology. Amongst the many potential pollutants you will explore materials varied as sheep dip, redundant vehicles, fallen stock and fuel oils.

You will also learn how to plan the use of animal manures through the development of a Farm Waste Management Plan. This entails matching of the spread of manures to the need of the crop and consequently as slurry is not all produced at times it can be used, you will learn how to plan slurry handling systems that conform to the latest codes and recommendations.

No agriculturist or farmer can avoid their responsibility to protect the wider natural environment through the responsible use or disposal of common farm materials. This Unit is designed to help you fulfil those obligations.