Unit 9: Manage Agricultural Environments

Unit code: F/600/9133

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

This unit aims to introduce learners to the skills and knowledge needed for understanding how agriculture fits with the environment, and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or onto further/higher education.

This unit aims to develop learners' understanding of the relationship between farming practices and the environment, and how this can be managed.

Unit introduction

Agriculture accounts for the main use of land in the UK and can, therefore, have a significant influence on the environment across large parts of the country. As interest in and concern about the future of the environment, climate change, energy conservation and food security increases at all levels, it is likely that the nature of this relationship will continue to receive significant national and political interest and scrutiny.

This unit is an overview of the impact of agricultural practices on the environment, but is flexible enough to allow centres to adapt the focus to reflect the most currently important environmental issues. It is designed to enable learners to develop practical skills, which will be of use in managing any agri-environmental schemes in a farm-based setting.

Learners will have the opportunity to explore the positive and negative environmental impacts of different farming practices, and to recommend how any negative impacts can be reduced. They will investigate legislation, codes of practice and environmental organisations and their impact on farming businesses. Learners will plan and develop skills in practical habitat management tasks, to meet specific habitat management objectives in an agricultural context.

Learning outcomes

On completion of this unit a learner should:

1 Understand the impact of different farming practices on the environment

2 Know significant environmental legislation and codes of practice

3 Be able to create a habitat management plan

4 Be able to complete practical habitat management tasks.

Unit content

1 Understand the impact of different farming practices on the environment

Environmental impact: visual; noise; physical eg waste, pollution control, impact on topography; consumption of raw materials and energy; impact on plant and animal species; immediate and long-term impact

Farming practices: conventional eg crop and livestock enterprises using routine and preventative treatments; use of mechanisation; farming for energy production; sustainable eg organic, permaculture

2 Know significant environmental legislation and codes of practice

Environmental legislation and codes of practice: impact of current relevant legislation and codes of practice eg Wildlife and Countryside Act 1981 (as amended), Environmental Protection Act 1990, Hedgerows Regulations 1997, Control of Substances Hazardous to Health (COSHH) Regulations 2002, Water Framework Directive, Cross Compliance Nitrates Directive, Waste Management (England and Wales) Regulations 2006, Environmental Impact Assessment (Agriculture) (England) Regulations 2006, Heather and Grass Burning Regulations and Code 2007

Environmental organisations: role of regulatory bodies eg Department for Environment, Food and Rural Affairs (DEFRA), Environment Agency, Welsh Assembly Government; non-governmental organisations eg British Trust for Conservation Volunteers (BTCV), Farming and Wildlife Advisory Group (FWAG), Linking the Environment and Farming (FWAG), Organic Farmers and Growers, Royal Society for the Protection of Birds (RSPB), Save our Songbirds, Soil Association, local wildlife trusts, Woodland Trust

3 Be able to create a habitat management plan

Habitat management objectives: appropriate objectives eg species protection, species introduction, maintenance or establishment of a habitat, meeting requirements of an agri-environment scheme such as environmental stewardship

Habitat management methods: selection of appropriate methods eg removal of invasive plant species, removal or reduction of invasive trees, scrub clearance, pond restoration, tree planting, weeding

4 Be able to complete practical habitat management tasks

Habitat management tasks: selection of suitable tasks eg pond clearance, tree planting, coppicing, hedge laying, pollarding, mowing, brush cutting, removing unwanted plants or trees, weeding, mulching, clearing litter or debris

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P1 evaluate the ways in which conventional farming practices have a positive and negative environmental impact [IE]		
P2 evaluate the ways in which sustainable farming practices have a positive and negative environmental impact [IE]		
P3 discuss ways in which the negative environmental impact of farming practices can be reduced [IE]	**M1** discuss practical implications of reducing negative environmental impacts	
P4 describe the impact of current environmental legislation and codes of practice on farming activities		
P5 outline the role of given environmental organisations within the agriculture industry	**M2** discuss the impact of legislation and environmental organisations on farming practice at a selected farm business	**D1** evaluate the contribution that agri-environmental schemes can make to a selected farm business
P6 select habitat management methods to meet given objectives		
P7 create a schedule for habitat management work	**M3** explain the rationale for including the selected habitat management methods	**D2** discuss any potential barriers to completing the habitat management work and how these may be overcome

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	**To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:**	**To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:**
P8 undertake appropriate risk assessment prior to undertaking selected practical habitat management work [SM]		
P9 specify and organise PPE, equipment and materials required for undertaking selected practical habitat management work [SM]		
P10 safely undertake practical habitat management tasks to meet given objectives. [RL, SM]	**M4** review the effectiveness of task completion in meeting given objectives.	**D3** recommend future actions and improvements to benefit the habitat further.

PLTS: This summary references where applicable in the pass criteria, in the square brackets, the elements of the personal, learning and thinking skills. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key			
	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

Delivery of this unit will involve practical and written assessments, visits to suitable habitats and will link to work experience placements.

As this unit involves practical activity it is important that health and safety is embedded within the delivery, and that learners develop skills in assessing and managing risk.

Learning outcome 1 requires learners to review the different practices involved in conventional and sustainable farming systems, and to compare the positive and negative environmental impacts. Visits to different types of farming enterprise will be helpful, especially if learners develop an environmental impact checklist in advance. Guest speakers may also stimulate interest, for example a farmer who has recently changed from a conventional to an organic farming system, or one involved in energy production.

Learning outcome 2 is likely to be delivered through formal classroom activity, discussions and learner research. Talks from representatives of any of the environmental organisations may be helpful, combined with a visit to the local wildlife trust.

Learning outcomes 3 and 4 are concerned with practical habitat management tasks. Formal input is likely to be required to help learners understand the type of habitat management objectives that may be set, and how these impact on the choice of habitat management methods used. These learning outcomes will require a significant practical element so that learners become confident in their approach to habitat management tasks, and can complete these tasks safely and effectively.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction to unit
Assignment 1 – Environmental Impact (P1, P2, P3, M1) Tutor introduces assignment
Theory session: defining environmental impact, class activity to produce environmental impact checklist for use when visiting farms
Classroom- based activity: differences between conventional and sustainable farming practices
Visits to conventional and sustainable farming enterprises
Classroom reflection on differences, follow-up work for assessment identified
Personal study/assignment completion/individual support
Assignment 2: Legislation and Organisations (P4, P5, M2, D1) Tutor introduces brief and subject
Theory session: introduction to legislation

Topic and suggested assignments/activities and/assessment
Classroom activity: prepare discussion on legislation from different perspectives
Personal study/assignment completion/individual support
Guest speaker from an environmental organisation, or visit to local wildlife trust
Theory session: range of organisations and their remit, how to assess their impact on farming
Theory session: agri-environmental schemes, their requirements and benefits
Personal study/assignment completion/individual support
Assignment 3: Habitat Management Plan (P6, P7, M3, D2) and Assignment 4: Habitat Management Tasks (P8, P9, P10, M4, D3) Tutor introduces assignments
Practical activity: range of habitat management tasks
Selection of habitat and objectives
Personal study/assignment completion/individual support
Schedule submitted and discussed
Practical: habitat management tasks completed
Personal study time for further reflection and improvements
Unit review

Assessment

To achieve a pass learners must achieve all the pass criteria.

For P1 and P2 learners' will need to identify at least three potential positive and negative environmental impacts of both conventional and sustainable farming systems. Each part of the unit content will need to be addressed, but could be as either a positive or negative impact. Learners should be encouraged to consider the immediate and long-term potential impacts of the farming systems investigated. Evidence could take the form of a case study, report, table, or presentation.

For P3, learners will need to review the negative impacts identified in P1 and P2, and suggest ways in which at least three of these may be reduced. Evidence could be presented in a visual form, for example an annotated poster or leaflet, or a verbal report with summary notes.

For P4, learners need to focus on the impact of the relevant legislation and codes of practice on farming practice. Evidence could include a case study, and be presented through a verbal presentation, report or annotated poster.

P5 asks learners to outline the role of environmental organisations within the agriculture industry. The tutor should identify an appropriate selection or agree this through discussion with learners. The selection should include a minimum of three organisations. Evidence could be a report using a case study, or a verbal presentation.

It is envisaged that P6 and P7 could be assessed using the same piece of evidence, where learners prepare an annotated schedule for habitat management work that identifies clearly the methods selected. Objectives for the habitat management work should be identified by the tutor or agreed through discussion with learners.

Assessment of P8, P9 and P10 is also linked. This could be based on some of the habitat management tasks identified within the schedule created for P6 and P7, but this may not always be practicable. P8 requires learners to complete a risk assessment before completing practical tasks, and for P9 they need to specify the required PPE, tools and equipment. Evidence could include completion of an appropriate pro forma. For P10, learners need to complete at least two habitat management tasks safely, which will need to be agreed with the tutor in advance. Evidence could include direct observation by the tutor, or evidence collected from an appropriate work placement. If assessed during a work placement, witness statements should be provided by a suitable representative and verified by the tutor.

To achieve a merit learners must meet the four merit criteria in addition to meeting all the pass criteria.

For M1, learners will need to develop further the evidence for P3, and demonstrate their understanding of the practical implications of making the suggested changes.

To achieve M2 learners need to apply the knowledge shown in P4 and P5 to explain the impact of legislation and environmental organisations on a specific farm business. The business could be chosen by the tutor, or by learners in discussion with the tutor.

For M3, learners are required to give a rationale for the chosen habitat management methods, which could be through annotating the schedule produced for P6 and P7. The rationale should be clear and based on the practicalities and effectiveness of the selected methods.

For M4, learners are required to evaluate the practical work undertaken, and assess how effectively it meets the objectives that were set.

To achieve a distinction learners must complete the three distinction criteria in addition to meeting all the pass and merit criteria.

For D1, learners must explain the contribution that agri-environmental schemes can make to a selected farm business. To avoid duplication of evidence it would be helpful to use the farm business reviewed for M2.

For D2, learners are required to identify potential barriers to completing the habitat management work and how these may be overcome. Evidence may be further annotation of the schedule produced for P6, P7 and M3, or a supplementary written or verbal report.

For D3, learners are required to develop their evaluation completed in M4 into recommendations for future actions and improvements to benefit the habitat further. This should still be in the context of the original objectives, but further objectives may also be suggested as part of the recommendation.

Programme of suggested assignments

The following table shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, P3, M1	Environmental Impact	Following visits to Farm A and Farm B, create a written report evaluating the potential positive and negative environmental impacts of both farms. Include in your report your suggestions for how three of these negative impacts could be addressed practically by the farm manager.	Written report

Criteria covered	Assignment title	Scenario	Assessment method
P4, P5, M2, D1	Legislation and Organisations	As a farm management consultant you are advising a local farm. Create an information leaflet which shows the impact of legislation and environmental organisations on their farming practices, and how any agri-environmental schemes may be used to benefit the business.	Case study/leaflet
P6, P7, M3, D2	Habitat Management Plan	For the habitat management objectives agreed with your tutor, create a schedule of habitat management tasks which will enable these objectives to be met. Annotate your schedule to show why you chose each method, and any potential barriers to completion.	Annotated schedule of activity
P8, P9, P10, M4, D3	Habitat Management Tasks	You will be completing a series of habitat management tasks. Before each task, complete a risk assessment and specify and organise PPE, equipment and materials. Once you have completed the tasks, review how effectively you completed them, and make recommendations for future actions and improvements to benefit the habitat further.	Practical tasks Completed risk assessment and equipment list pro formas Completed evaluation

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit has particular links with:

Level 2	Level 3
Participate in Providing Estate Maintenance	Element Ga15.2 Maintain game habitat Element CU88.1 Identify the need for, and plan, habitat management work Element CU88.2 Co-ordinate and oversee habitat management work
Conservation and Improvement of British Habitats	Undertake Estate Skills
	Understand Grassland Management

Essential resources

Learners will need access to a farm enterprise that is willing for environmental improvement work to be undertaken so that they can take part in practical activities associated with managing and maintaining habitats. Before undertaking any farm visits or practical work it is essential that all health and safety requirements are met, including the use of sufficient and appropriate PPE. Learners should also have access to machinery such as tractors and there should be sufficient hand tools for all learners to be involved in practical activity.

Sufficient library and IT resources will need to be available so learners can research the unit content, and site visits to conventional and sustainable farming enterprises would be beneficial.

Employer engagement and vocational contexts

As learners are required to demonstrate their understanding of the practical applications of the subject it is important that employer input is sought. This could be an appropriate mix of people engaged in farming activity and those acting in a regulatory or advisory capacity.

Indicative reading for learners

Textbooks

Agate E – *Tree Planting and Aftercare: A Practical Handbook* (BTCV, 2001) ISBN 0946752257

Agate E – *Woodlands: A Practical Handbook* (BTCV, 2002) ISBN 0946752338

Andrews J and Rebane M – *Farming and Wildlife: A Practical Management Handbook* (Royal Society for the Protection of Birds, 1994) ISBN 0903138670

Blyth J, Evans J, Mutch W and Sidwell C – *Farm Woodland Management, 2nd Edition* (Farming Press Books and Videos, 1991) ISBN 0852362196

Brooks A and Agate E – *Hedging: A Practical Handbook* (BTCV, 1998) ISBN 0946752176

MacLean M – *New Hedges for the Countryside* (Farming Press Books and Videos, 1992) ISBN 0852362420

Mulvaghy G, Fladmark J and Evans B – *Tomorrow's Architectural Heritage: Landscape and Buildings in the Countryside* (Mainstream Publishing, 1991) ISBN 1851583785

Parker S – *Green Files: Waste and Recycling* (Heinemann Educational Books, 2004) ISBN 0431183015

Royal Society for the Protection of Birds – *Ecosystems and Human Activity* (Collins Educational, 1994) ISBN 0003266443

Stokes A – *Health and Safety Overview for Practical Conservation Project: A Guide to Good Practice for Conservation Groups and Land Managers* (BTCV, 1999)

Watt T and Buckley G – *Hedgerow Management and Nature Conservation* (Imperial College Press, 1995) ISBN 0862660378

Journals

Crops

Ecology

Environmental Management

Farmers Guardian

Farmers Weekly

Landwards

Organic Farming

Websites

www.bctv.org.uk	British Trust for Conservation Volunteers
www.biodynamic.org.uk	Biodynamic Agriculture Association
www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.environment-agency.org.uk	Environment Agency
www.forestry.gov.uk	Forestry Commission
www.fwag.org.uk	Farming and Wildlife Advisory Group
www.naturalengland.gov.uk	Natural England
www.organicfarmers.org.uk	Organic Farmers and Growers
www.rspb.org.uk	Royal Society for the Protection of Birds
www.soilassociation.org	The Soil Association
www.woodland-trust.org.uk	The Woodland Trust

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Independent enquirers	evaluating the environmental impact of conventional and sustainable farming practices discussing ways to reduce negative environmental impacts
Reflective learners	undertaking practical habitat management tasks safely
Self-managers	undertaking risk assessments before commencing practical habitat management work specifying and organising PPE, equipment and materials undertaking practical habitat management tasks safely

Although PLTS opportunities are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	completing research into environmental legislation
Team workers	working together to create a checklist to evaluate environmental impact
Self-managers	completing assignment work
Effective participators	discussing environmental legislation from alternative viewpoints

Functional skills – Level 2

Skill	When learners are ...
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	investigating environmental legislation and organisations
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: • text and tables • images • numbers • records.	completing assignment work
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing environmental legislation from alternative viewpoints agreeing habitat management objectives and tasks
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	investigating environmental legislation, organisations and impact researching ways to reduce negative environmental impact
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	evaluating positive and negative environmental impacts outlining environmental legislation and organisations preparing a habitat management schedule