Unit 33: Undertake Gamebird Production

Unit code: A/600/9440

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

Aim and purpose

This unit aims to introduce learners to the skills used in and understanding of gamebird production 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.

Unit introduction

This unit follows a logical sequence from obtaining suitable eggs, through incubation and hatching, to rearing gamebirds from one day to six weeks old. As the unit is essentially concerned with the management requirements and practical skills of livestock handling, learners will develop these skills through hands-on experience.

Learners will begin by studying key factors affecting the health and welfare of gamebirds, including diseases, stress and welfare, and behavioural issues. They will investigate signs of health and welfare and biosecurity measures.

An awareness of the range of methods available to obtain fertile eggs, whether from caught-up stock, a closed flock or bought-in eggs, will be developed. Learners will also become familiar with the requirements of laying birds.

They will assist with the incubation and hatching of a batch of eggs. This will involve operating an incubator/hatcher, setting the eggs, monitoring the incubation process and 'taking off' the hatch.

Learners will have an opportunity to rear a batch of gamebirds from one day to six weeks old, paying particular attention to their health and welfare at all stages of development.

Learning outcomes

On completion of this unit a learner should:

1 Understand management of reared gamebirds

2 Know how incubation is organised

3 Be able to operate an incubator/hatcher to produce day old chicks

4 Be able to rear gamebirds from day old to poultry stage.

Unit content

1 Understand management of reared gamebirds

Factors affecting health and welfare: common diseases of gamebirds eg coccidiosis; effects of stress; behavioural disorders eg feather pecking; internal/external parasites; requirements at different stages of growth

Signs of health and welfare: external symptoms eg high mortality, ruffled/fluffed feathers, droopy head, unusual faeces, 'snicking'; normal and abnormal behaviour eg lethargy, change in feed and water consumption, hysteria; recognition of normal internal organs

Biosecurity procedures: planning; methods of disease transmission and barriers to transmission eg use of disinfectants, exclusion of wild birds, change of ground, isolation of sick birds

2 Know how incubation is organised

Sources of eggs and breeding stock: breeding behaviour; buying-in eggs; catching-up stock birds; operation of a closed flock; identification and sexing of breeding stock; advantages and disadvantages of each system including costs; relevant current legislation

Management of stock birds: requirements of breeding stock throughout the season; welfare considerations eg stocking density, prevention of fighting, reduction of treading damage; suitable sex ratios; characteristics of normal behaviour eg food consumption, egg production; signs of stress and disorder eg reduced appetite, reduced egg production; factors affecting fertility and hatchability of eggs eg cleanliness of pen, egg eating by stock and pest birds, timeliness of egg collection, fertility of stock birds, storage conditions; specifications for different types of laying pen eg large communal pens, moveable harem pens, pair boxes; appropriate recording systems eg paper based and IT based; egg collection and handling techniques; health and safety; personal protective equipment (PPE); relevant current legislation

3 Be able to operate an incubator/hatcher to produce day old chicks

Egg grading and storage: specifications for grading eggs suitable for incubation eg size, cleanliness, damage, colour; egg cleaning and sanitising procedures eg washing, disinfecting, fogging; suitable storage conditions to maintain viability of eggs eg humidity, temperature, time

Incubation/hatching: conditions required for successful incubation for both embryonic development and hatching eg time, temperature, humidity, turning; common types of incubator/hatcher eg electronic; use of broody hens; methods of monitoring and maintaining the incubation environment eg candling and weighing eggs, thermometers, wet and dry bulb thermometers, digital data loggers; operation and maintenance of incubators and hatchers eg temperature, humidity and turning, automatic versus manual machines; methods used to confirm fertility and monitor embryo development eg candling and weighing eggs; chick handling techniques; appropriate recording systems; health and safety; PPE; relevant current legislation

4 Be able to rear gamebirds from day old to poultry stage

Management of stock: provision of suitable area to maintain chick condition and survival eg temperature, feed, water; environmental needs and resources required at each stage of development of chicks eg temperature, feed, water, minimal stress; importance of maintaining these requirements

'Normal' behaviour and signs of stress and disorder: common disorders associated with gamebirds and methods of dealing with them eg starve-outs, coccidiosis, gapes; health and safety; relevant current animal welfare legislation and associated codes of practice eg code of good game rearing; appropriate recording systems eg mortality records, medication records; PPE

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 assessment 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 explain the establishment and maintenance of a gamebird production programme	**M1** produce a biosecurity plan that will maximise the health and welfare of selected reared gamebirds to meet given objectives	**D1** evaluate the success of a selected gamebird rearing activity recommending valid improvements
P2 explain management of factors that affect the health and welfare of selected reared gamebirds		
P3 assess operations carried out recommending improvements		
P4 describe commonly used methods for obtaining gamebird eggs for incubation [RL]	**M2** explain factors that might reduce the quality and quantity of selected gamebird eggs	**D2** evaluate selected methods of obtaining gamebird eggs for production
P5 outline requirements of breeding stock		
P6 plan hatchery operations to meet given objectives covering: ◊ egg preparation ◊ egg incubation ◊ egg hatching ◊ despatch of deformed chicks ◊ boxing of day-old chicks		
P7 safely carry out incubation of gamebird eggs to meet given objectives [TW, SM, EP]	**M3** explain the development of a selected gamebird at each stage of incubation and link this to the operation of a given incubator/hatcher	
P8 safely use incubation equipment to meet given objectives		
P9 adapt operations to factors which affect incubation		

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:**
P10 ensure welfare of chicks is maintained	**M4** produce a detailed record of a gamebird rearing activity to meet given criteria.	
P11 maintain gamebird production to meet given objectives [TW, SM, EP]		
P12 adapt operations to meet factors which affect production.		

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 assessments, written assessment, visits to suitable collections and will link to work experience placements.

Whichever delivery methods are used, it is essential that tutors highlight the current relevant industry codes of practice to ensure that these are understood and followed. Tutors must stress the importance of animal welfare, sound environmental management and the need to manage the resource to comply with current legislation.

Health and safety issues relating to gamebird rearing must be stressed and reinforced regularly and risk assessments must be undertaken before any practical activities. Adequate PPE must be provided and used following the production of suitable risk assessments.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

Learning outcomes 1 and 2 require learners to become familiar with a range of techniques. These are likely to be delivered through formal lectures, discussion, site visits, practicals and independent learner research. Site visits will enable learners to witness the use of a variety of techniques at first hand. These would, ideally, include a range of small-scale to large-scale operations. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their work, the situations they face and the methods they use.

Learning outcomes 3 and 4 require learners to be involved in the incubation and rearing of a batch of gamebirds. This could form a group project where small groups of learners are given the responsibility for rearing a batch of poults from hatching eggs to the six-week stage. Delivery methods should be varied and should include formal lectures, demonstrations, supervised practical instruction and visits to examine commercial practices. Visiting expert speakers could add to the relevance of the subject. For example, a game farm manager or gamekeeper could talk about their production strategies and how they maintain a safe working environment.

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 and overview of the unit.
Overview of game rearing – historical context, species reared, objectives of rearing programmes, different techniques.
Health and welfare of gamebirds – factors affecting health, common diseases, signs of ill health/symptoms, remedial treatments, biosecurity.

Topic and suggested assignments/activities and/assessment
Assignment 1: Gamebird Rearing Plan (P1, P2, P3, M1) Tutor introduces assignment brief.
Gamebird rearing plan.
Egg production techniques for each species, different methods, advantages and disadvantages of each method. Factors affecting quantity and quality of eggs produced.
Assignment 2: Obtaining Eggs (P4, P5, P6, M2) Tutor introduces assignment brief.
Obtaining eggs.
Incubation and hatching eggs – theory.
Incubation and hatching – practical operation of machines.
Rearing gamebirds – theory.
Rearing gamebirds – practicals.
Assignment 3: Gamebird Rearing (P7, P8, P9, P10, P11, P12, M3, M4 and D1). Tutor introduces assignment brief.
Gamebird rearing.
Unit review.

Assessment

For P1, P2 and P3, learners must provide information on factors that affect the health and welfare of selected reared gamebirds. Tutors should identify the species of gamebirds or agree them through discussion with the learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. As a minimum, learners should provide evidence covering five major factors. This could be assessed through an assignment linked to other grading criteria, for example M1 and/or D1. Evidence could take the form of a pictorial presentation with notes (possibly using appropriate software or an overhead projector), an annotated poster or a project.

Alternatively, these could be assessed directly by the tutor during practical activities. If this format is used then suitable evidence from guided activities would be presented as observation records completed by learners and the tutor, accompanied by appropriate work logs or other relevant learner notes. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the tutor.

For P4, P5 and P6, learners must cover methods and requirements for obtaining gamebird eggs for incubation. They will be expected to cover the range of methods listed in the unit content. Evidence for P4, P5 and P6 could take the form of a pictorial presentation with notes (possibly using appropriate software or an overhead projector), an annotated poster or a project.

For P7, P8 and P9, learners are required to operate an incubator/hatcher to produce selected day-old gamebird chicks to meet given objectives. Tutors should identify the gamebirds and objectives or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners.

These criteria could be assessed directly by the tutor during practical activities. If this format is used then suitable evidence from guided activities would be observation records completed by learners and the tutor, accompanied by appropriate worklogs or other relevant learner notes. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the tutor.

For P10, P11 and P12, learners must rear a batch of selected gamebirds from day-old to poult stage to meet

given objectives. Tutors should identify the gamebirds and objectives or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. These may be the same as those used for other grading criteria. Evidence could take the same form as that presented for P7.

For M1, they must produce a biosecurity plan that will maximise the health and welfare of selected reared gamebirds to meet given objectives. Tutors should identify the gamebirds and objectives or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. These may be the same as those used for other grading criteria.

Learners should produce a plan that clearly identifies each health and welfare factor and put in place appropriate biosecurity measures to optimise gamebird health and welfare. Evidence could take the form of a written assignment or project that links to P1 and/or D1.

For M2, learners must explain factors that might reduce the quality and quantity of selected gamebird eggs and explain how these problems can be avoided. Tutors should select the eggs studied or agree them through discussion with learners. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. As a minimum, learners should provide evidence covering five factors. Evidence could take the form of a presentation to the group or use any of the methods suggested for P1.

M3 requires learners to explain the development of a selected gamebird at each stage of incubation and link this to the operation of a given incubator/hatcher. Tutors should identify the gamebirds and incubator/hatcher used or agree them through discussion with learners. These may be the same as those used for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. Evidence could take the form of a presentation to the group or use any of the methods suggested for P1.

For M4, learners must produce a detailed record of a gamebird rearing activity to meet given criteria. Tutors should identify the gamebirds and objectives used or agree them through discussion with learners. These may be the same as those used for other grading criteria. Where possible, to ensure fairness of assessment the size and complexity of the tasks should be the same for all learners. Evidence could be presented in the form of a written project that links to P4.

For D1, learners must evaluate the effectiveness of given biosecurity and other measures designed to maximise health and welfare of selected reared gamebirds. Tutors should identify the biosecurity and other measures or agree them through discussion with learners. These may be the same as those used for other grading criteria. Assessment could be presented in the form of a written assignment that links to M1.

D2 requires learners to evaluate selected methods of obtaining gamebird eggs for production. Tutors should identify the methods or agree them through discussion with learners. These may be the same as those used for other grading criteria. Learners are required to provide evidence that covers the three different methods listed in the unit content. They must consider the advantages and disadvantages of each method and analyse the costs associated with each. Evidence could be presented using the same format as for P4.

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	Gamebird Rearing Plan	Produce a plan for rearing a batch of gamebirds clearly indicating what resources will be required and when to maintain their health and welfare.	Written report.

Criteria covered	Assignment title	Scenario	Assessment method
P4, P5, P6, M2	Obtaining Eggs	Write a report that identifies how gamebird eggs could be obtained and the advantages/disadvantages of each source.	Written report.
P7, P8, P9, P10, P11, P12, M3, M4 D1	Gamebird Rearing	Incubate, hatch and subsequently rear, to six weeks of age, a batch of gamebirds. Produce records of each stage of the process and evaluate the success of the activity by analysing these records.	Practical observation and written report.

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
Introduction to Game Management	Element Ga17.1 Plan and organise incubation Element Ga17.2 Manage incubation
	Understanding Principles of Game Management

Essential resources

Learners will need access to a range of gamebird rearing facilities, which use a wide variety of techniques for each species. They will also need access to suitable incubators or hatchers, brooding units, shelters and runs to incubate and rear a batch of birds to six weeks of age.

Textbooks, IT and internet support should be available for learners to carry out research to underpin their knowledge of the production of a variety of gamebirds.

Employer engagement and vocational contexts

Tutors delivering this unit should be competent and experienced gamebird rearers, and/or demonstrate evidence of industrial or technical updating. Experienced game rearers from industry could be used to add to this technical competency.

Learners should be encouraged to develop their knowledge during work experience placements. Off-site visits should also be used to enhance the learning experience and enable learners to see a variety of situations and methods.

Indicative reading for learners

Textbooks

Beer J — Diseases of Gamebirds and Wildfowl (Game Conservancy, 1988) ASIN B0000EHJ1D

Brown A and Robbins G — The New Incubation Book (Hancock House Publishers, 2003) ISBN 0888395272

Game Conservancy — Egg Production and Incubation (Game Conservancy, 1993) ASIN B0000EHNYI

Game Conservancy — Gamebird Rearing (Game Conservancy, 1994) ISBN 0950013056

Hobson J — Small-scale Game Rearing (The Crowood Press, 1988) ISBN 1852230185

Howman K — Pheasants of the World – *Their Breeding and Management* (Hancock House Publishers, 1993) ISBN 088839280X

Websites

www.defra.gov.uk	Department for Environment, Food and Rural Affairs
www.gct.org.uk	The Game Conservancy Trust
www.hse.gov.uk	Health and Safety Executive
www.lantra.co.uk	Sector Skills Council for the Environmental and Land-based Industries
www.nationalgamekeepers.org.uk	National Gamekeepers' Organisation

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 ...
Reflective learners	evaluating the success of their rearing project
Team workers	rearing a batch of gamebirds in small groups
Self-managers	evaluating the success of their rearing project
Effective participators	rearing a batch of gamebirds in small groups.

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	researching different sources of gamebird eggs.

Functional Skills — Level 2

Skill	When learners are ...
ICT – Use ICT systems	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	using ICT to record and store rearing data, including use of remote data loggers for temperature and humidity records
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	
Manage information storage to enable efficient retrieval	entering records on to spreadsheets for further analysis
Follow and understand the need for safety and security practices	
Troubleshoot	
ICT – Find and select information	
Select and use a variety of sources of information independently for a complex task	
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	
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	analysing records from gamebird rearing exercise
Bring together information to suit content and purpose	
Present information in ways that are fit for purpose and audience	
Evaluate the selection and use of ICT tools and facilities used to present information	
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	

Skill	When learners are ...
Mathematics	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	calculating key performance indicators for gamebird rearing
Identify the situation or problem and the mathematical methods needed to tackle it	
Select and apply a range of skills to find solutions	
Draw conclusions and provide mathematical justifications	
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	reading material on the subject from a variety of sources for their assignment work
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	reading around subjects and producing clear and concise documents using correct feeding terminology for the unit.
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing a written report on the gamebird rearing activity.