

Unit 15: Undertaking Poultry Production

Unit code:	J/600/9148
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 poultry 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.

The aim of this unit is to develop learner skills and knowledge of monitoring and caring for poultry in different systems of production.

● Unit introduction

The poultry production industry in the UK involves mainly three species: chickens, turkeys and ducks. It also involves a wide variety of housing and husbandry methods. Workers in the industry might be specialists, working with one stage of the life cycle of the bird and caring for hundreds of thousands of birds at one time, or they might work with poultry as part of a larger, more diverse enterprise.

This unit concentrates on the monitoring and care of commercial poultry under different systems. Learners will identify different commercial poultry systems including the range of housing systems associated with each type of production system and they will need to select appropriate accommodation taking account of animal welfare issues. Learners will study husbandry requirements for one or more classes of commercial poultry, which might include broiler production, commercial layers (used to produce eating eggs), ducks and turkeys.

Learners will develop their knowledge and skills in the preparation of facilities to accommodate one class of poultry, caring for the birds and recording flock performance. They will consider performance indicators for poultry, measure and record flock performance and compare performance with targets.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know the requirements of the main commercial poultry systems
- 2 Understand husbandry requirements for different systems of poultry production
- 3 Be able to deliver routine husbandry procedures
- 4 Understand production performance.

Unit content

1 Know the requirements of the main commercial poultry systems

Systems: intensive systems eg cages, barn, deep litter; alternative systems eg free range, mobile arks; class eg broilers, breeders, commercial layers, turkey breeders, turkey growers, duck breeders, growing ducklings; growers and layers, day old and young birds; point of lay birds; breeders; commercial layers

Housing: insulation; lighting; equipment eg feeding, drinking; nests; egg collection systems eg automatic cage systems, automatic and manual nesting systems, manual systems; slats; egg storage; waste; cage systems eg conventional cages, enriched cages; current relevant legislation and restrictions; adjustments and/or adaptations (equipment, lighting, ventilation) to maximise profit; animal welfare; environmental issues, impact on building design

2 Understand husbandry requirements for different systems of poultry production

Husbandry methods: stocking densities; mating ratios; catching; free range; barn; cage systems; feeding and nutrition for growth rate and performance; feeding methods eg flat chain, pan feeders, floor feeding; medication protocols

Equipment: fans; vents; heaters; controls; alarms; failsafe; generators; natural and fan assisted; measuring equipment eg thermometers, hygrometers, digital measuring equipment, air speed meters

Environment: in hot and cold weather conditions; lighting and lighting patterns; temperature; air quality, air flow, minimum ventilation rates, ventilation control; health and safety; evaporative cooling

3 Be able to deliver routine husbandry procedures

Preparation: cleaning; maintaining environment eg ventilation, temperature, lighting; equipment eg feeders, drinkers, heaters, fans, ventilation control systems; establishment of biosecurity; records; bedding; health and safety; PPE

Care: daily routine eg legislative requirements, inspection; recording; controlling the environment; basic litter management; feeding; health checks; culling; large- scale poultry production systems (design, purpose, work routines, allocation and roles of staff, flock cycles, challenges); incubation; egg hatching; brooding; stock restraint; administering medication.

4 Understand production performance

Measurement: sampling eg random sample, representative sample, coefficient of variation (CV%); automatic; feed; water; medication; temperature; ventilation; consumption

Performance: bodyweight; variation; egg numbers; egg weight; egg mass; egg quality; mortality; food conversion rate (FCR), fertility; hatchability; hen housed; hen day; mortality

Targets: breed standards; commercial targets eg weight for age

Records: computers; graphs and charts; storage; legal requirements eg health and safety, bird welfare, mortality, medical

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 identify the major commercial poultry systems [IE]	M1 explain valid factors that determine the choice of each system	D1 discuss challenges to stockmanship and management posed by large-scale poultry production
P2 outline the factors that determine the choice of each system		
P3 describe different accommodation requirements for the major commercial poultry systems		
P4 explain different husbandry requirements for different systems of production [IE]	M2 discuss, in detail, the nutritional requirements for a selected production system	
P5 examine the husbandry required for a given system		
P6 discuss common problems associated with poultry in production systems		
P7 carry out associated stock tasks [CT, RL, SM]	M3 produce a work plan for a large-scale poultry production system	
P8 prepare accommodation for a given class of poultry		
P9 carry out routine care of stock		
P10 maintain correct environmental conditions for given systems		
P11 measure and record the performance of a given system [CT, SM]		D2 design a layout for a poultry unit for a selected production system

P12 analyse selected physical and financial records to assess performance of a poultry system.	M4 justify the reasons for keeping records of poultry production.	D3 analyse, in detail, most physical and financial records to accurately assess the performance of a poultry system.
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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 should use as wide a range of techniques as possible. This could include lectures, discussions, seminar presentations, supervised poultry practicals, site visits, work placements, internet and/or library-based research and the use of personal and/or industrial experience. Delivery should stimulate, motivate, educate and enthuse learners.

Work placements should be monitored regularly in order to ensure the quality of the learning experience. It would be beneficial if learners and supervisors were made aware of the requirements of this unit before any work-related activities are undertaken so that naturally occurring evidence can be collected at the time. Learners should ask for observation records and/or witness statements to be provided as evidence of this.

Visiting expert speakers could add to the relevance of the subject for learners.

Whichever delivery methods are used, it is essential that tutors and learners comply strictly with any biosecurity requirements of farms visited. The tutor should be aware that, particularly for intensive poultry production, management of the controlled environment is a critical skill for a stockman, probably accounting for most of the differences in flock performance from one farm to another.

Health and safety issues relating to working on poultry farms 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 outcome 1 requires learners to identify the major commercial poultry production systems. They should develop their knowledge of the industry beyond those aspects they will have come into contact with in a normal work situation. This is likely to be delivered through formal lectures, discussion, farm visits, supervised practical sessions and independent learner research.

The knowledge of a variety of systems and classes of stock required for the merit and distinction grades could be enhanced by discussions in the classroom with other learners who have practical experience of working with different classes of stock. Visiting speakers, particularly those following the Advanced Apprenticeships in Poultry Production, can be a rich source of information for learners.

Learning outcome 2 requires learners to identify the husbandry requirements required for the different production systems. Within controlled environments learners must demonstrate an understanding of the required equipment and the importance of correct settings. Delivery is likely to be in the form of lectures, discussion, site visits, supervised practical sessions and independent learner research.

Learning outcome 3 focuses on the practical aspects of poultry health and welfare, and the stock tasks for different poultry production systems. Learners will gain knowledge and practical experience while carrying out husbandry and stock tasks. Delivery will primarily be in the form of discussion, site visits, supervised practical sessions and independent learner research.

Learning outcome 4 covers the measuring and recording of poultry performance. Accurate record keeping is a key factor for all commercial poultry farms, and for many aspects such as mortality it is a legal requirement. A practical way of delivering this learning outcome could be to use raw data from a real commercial flock, including for rearing and laying, and ask learners to compile production graphs and performance figures from this. The records used for this learning outcome should not be the same set of records learners used for assessment. It is important, however, that learners understand the production process for growing and laying birds, but not for a hatchery.

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 unit.
Overview of the main commercial poultry production systems/industry trends.
Assignment 1: Poultry Production Systems (P1, P2, P3, P6, M1, D1)
Tutor introduces assignment.
Independent research to complete assessment.
Theory – husbandry methods.
Assignment 2: Poultry Husbandry (P4, P5, M2)
Tutor introduces assignment brief.
Theory – incubation, hatching, brooding.
Practical – related to incubation, hatching, brooding.
Assignment 3: Design a Poultry Unit (D2)
Tutor introduces assignment.
Time to complete.
Theory – genetics for production, breeding, insemination.
Practical stock tasks – eg handling, medication, recording.
Theory – nutrition.
Assignment 4: Practical Routine Husbandry (P7, P8, P9, P10, M3)
Practice throughout unit – placement or duties – including health checks, disease recognition, feeding/watering, environment control, routine stock procedures.
Theory – controlled environment requirements, welfare issues.
Assignment 5: Performance Analysis (P11, P12, M4, D3) Tutor introduces assignment
Time to complete.
Theory – market requirements, product storage, data collection.
Unit review.

Assessment

Assessment methodology should reflect the opportunities provided by the range of delivery methods. It could involve practical and written assessments, visits to suitable poultry units and, ideally, will link to work experience placements.

For P1 and P2, learners must identify major commercial poultry production systems and outline the factors that determine the choice of each system. They are expected to cover a range of systems, for example

broilers, breeders, growers and layers. Evidence could take the form of a pictorial presentation with notes (possibly using appropriate software or an overhead projector).

For P3 and P4, learners must provide information on the different accommodation and husbandry requirements for a range of production systems. This should include information about housing and meet appropriate welfare guidelines. Learners could produce a presentation using annotated diagrams and plans or a series of photographs. Alternatively, evidence could be in the same format as for P1.

P7, P8, P9 and P10 could be linked. P7 requires learners to carry out routine, daily husbandry tasks associated with a system of production. Learners should ensure that their activities are in accordance with relevant welfare codes, environmental requirements and biosecurity.

For P8, P9 and P10, learners must prepare and maintain a given class of poultry. This could be the same system of production as for P7. Tutors should identify the class of poultry and objectives or agree them through discussion with learners. Where possible, to ensure assessment is fair the size and complexity of the task should be the same for all learners.

An appropriate assessment method would be for learners to prepare and care for one shed of poultry whilst on work experience, or prepare and care for a number of birds without significant assistance at the centre. Experience with only one class of poultry is required. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the tutor.

For P11 and P12, learners must record the performance of either layers or growers and produce an analysis of performance records. This could be assessed directly by the tutor during practical activities. If this format is used then suitable evidence from guided activities would be detailed observation records completed by learners and the tutor. If assessed during a placement, witness statements should be provided by a suitable representative and verified by the tutor.

For M1, learners must explain the factors that determine the choice of poultry production systems, this will be more in-depth and detailed evidence from that produced for P2. Evidence could be in the same format as for P1.

For M2, learners must discuss, in detail, the nutritional requirements for a selected class of poultry. Tutors should identify the class of poultry or agree it through discussion with learners. Where possible, to ensure assessment is fair the complexity of the tasks should be the same for all learners. Learners could produce a presentation using annotated diagrams and plans or a series of photographs as in P2.

M3 requires learners to produce a work plan for a large-scale poultry production system. This could be linked to D2.

For M4, learners are required to justify the reasons for keeping records. This could be focused on one system of production. Tutors should identify the system or agree it through discussion with learners. Where possible, to ensure assessment is fair the size and complexity of the tasks should be the same for all learners.

For D1, learners must discuss the challenges to stockmanship and management posed by large-scale poultry production. Where possible, to ensure assessment is fair the size and complexity of the tasks should be the same for all learners. As a minimum, learners should provide evidence covering two classes of poultry, for example 30,000 free range layers and 250,000 broilers. Evidence may be in the same format as for P1.

For D2 learners must design a poultry unit layout, evidence is likely to be the completed design.

D3 requires learners to interpret and analyse a full set of performance records for a completed flock of growers and layers from raw data. An actual set of raw data including egg numbers egg weight, mortality and feed consumption, can be obtained from a commercial enterprise for use either by learners or the tutor.

Full analyses of the records are required, and the tutor should ensure that the records are detailed enough to enable this. Laying flock records, including hatchability and fertility figures' provide a more useful and interesting assessment activity.

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, P6, M1, D1	Poultry Production Systems	Produce an overview of the major commercial poultry systems, the factors determining the choice of each system and the challenges to stockmanship and management posed by large- scale poultry production.	Presentation through poster/PowerPoint/oral or combination.
P4, P5, M2	Poultry Husbandry	Produce a report on the husbandry techniques required for different production systems. Include a detailed discussion on the nutritional requirements for a selected system.	Written illustrated evidence.
D2	Design a Poultry Unit	Using an existing production area, for which modifications can be recommended, or an area allocated by your tutor design a poultry unit for an identified production system. Justify the design in terms of welfare requirements, building materials, materials handling, etc.	Annotated plan. Written information to support the plan. Produce a work plan for the production system.
P7, P8, P9 P10, M3	Practical Routine Husbandry	Assessment of routine husbandry and practical livestock tasks to be assessed by tutor/work supervisor.	Duty reports from work supervisor or practical assessment by tutor. Witness/observer statements.
P11, P12, M4, D3	Performance Analysis	You are to analyse the performance of a selected production unit from a set of data provided by your tutor/ work placement supervisor.	Data analysis. 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 Farm Animal Production	Understanding Livestock Breeding and Nutrition
	Understand and Promote Animal Health
	Element LP7.1 Prepare feed and water supplies for livestock
	Element LP7.2 Monitor and maintain the supply of feed and water to livestock
	Element LP38.1 Monitor and maintain the preparation of birds for reproduction
	Element LP38.2 Provide the conditions for fertilisation to take place
	Element LP39.1 Monitor and maintain the brooding of young birds
	Element LP39.2 Monitor and maintain the growth of young birds
	Element LP40.1 Monitor the receipt of eggs for hatching
	Element LP40.2 Select and monitor eggs for hatching

Essential resources

Learners will need access to a poultry unit, with a sufficient number of birds, which provides a realistic environment to prepare for work in the poultry production industry.

Tutors delivering this unit should be competent and experienced poultry managers. Ideally, they should have recent industrial experience within the poultry production industry or show evidence of regular contact with the industry and/or technical updating.

Employer engagement and vocational contexts

This unit focuses on the background knowledge and practical skills learners need to gain employment in the poultry production industry.

Access to work placements and/or site visits should be an integral part of the delivery of this unit. In this way employers and industry practitioners are able to input into learner development. This input can be enhanced further if learners and placement supervisors are aware of the unit requirements before work-related activities are undertaken, so that naturally occurring evidence can be acknowledged.

Visiting expert speakers from industry would add further relevance to the subject.

Indicative reading for learners

Textbooks

Appleby M C, Hughes B O, Mench J A (eds) – *Poultry Behaviour and Welfare* (Nottingham University Press, 2004) ISBN 0851996671

Gillespie J – *Modern Livestock Poultry Production, 6th Edition* (Delmar, 2000) ISBN 0766816079

Leeson S and Summers J D – *Broiler Breeding Production (Digital reprint)* (Nottingham University Press, 2009) ISBN 1904761798

Leeson S and Summers J D – *Commercial Poultry Nutrition 3 (Digital Reprint)* (Nottingham University Press, 2009) ISBN 190476178X

McMullin – *Pocket Guide to Poultry Health and Disease* (Nottingham University Press, 2004) ISBN 095301505X

Rose S – *Principles of Poultry Science* (CABI Publishing, 1996) ISBN 085199122X

Sainsbury D – *Poultry Health and Management: Chickens, Ducks, Turkeys, Geese, Quail, 4th Edition* (Blackwell Science, 1999) ISBN 0632051728

Walker A and Charles D – *Poultry Environmental Problems* (Nottingham University Press, 2002) ISBN 1897676972

Journals

Poultry World

World Poultry

Websites

www.fwi.co.uk/poultry

Farmers Weekly, Poultry news

www.thepoultrysite.com

website for the global poultry industry

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 ...
Creative thinkers	applying techniques for different production systems when carrying out routine husbandry tasks
Reflective learners	comparing husbandry methods for a range of production systems
Self-managers	preparing and maintaining accommodation and care of stock organising time to ensure all tasks are completed.

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 poultry production systems
Creative thinkers	preparing a plan of the layout of a poultry unit and a work plan.

● Functional Skills — Level 2

ICT – Find and select information	
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	using the internet to research information on poultry production systems
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> • text and tables • images • numbers • records 	producing a presentation on poultry production systems maintaining performance records
Present information in ways that are fit for purpose and audience	producing a presentation on poultry production systems producing a plan of a poultry unit producing a work plan
Mathematics	
Identify the situation or problem and the mathematical methods needed to tackle it	using welfare information on space requirements for housed poultry producing a plan of a poultry unit – space allocation
Select and apply a range of skills to find solutions	analysing selected physical and financial records to assess performance
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	producing results from the analysis of physical and financial information interpreting and acting on information provided by controlled environment systems
English	
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	researching for presentations
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing written presentations for assessment.