



National Unit specification

General information

Unit title: Primary Food Production: Aquaculture

Unit code: H6RE 46

Superclass: NE

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Version: 01

Unit purpose

This Unit is designed to enable learners to understand the basic characteristics of a chosen farmed fish, aspects of culture, diseases that can affect them and their nutritional requirements. Throughout this Unit the term 'fish' is used to refer to all the species of fish and shellfish commonly farmed in Scotland, including fin-fish and shellfish and marine and fresh water species. Learners will have the opportunity to be involved with raising their own fish, having produced a plan and considered the health and safety requirements. They will then be able to evaluate the success of the enterprise. The Unit is intended for learners who wish to work in aquaculture and/or local food production.

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Describe key aspects of aquaculture
- 2 Assist in fish production
- 3 Evaluate success

Credit points and level

1.0 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6)

National Unit specification: General information (cont)

Unit title: Primary Food Production: Aquaculture

Recommended entry to the Unit

While entry is at the discretion of the centre, learners would normally be expected to have attained one of the following, or equivalent:

- ◆ National 5 Biology
- ◆ NPA Aquaculture (SCQF levels 4 or 5)
- ◆ NPA Crofting (SCQF level 5)
- ◆ Hospitality and Catering (SCQF level 5)
- ◆ Rural skills (SCQF level 5)

Learners taking this Unit do not need to have any prior knowledge of food production, however good practical skills in working with animals, particularly the chosen animal, would be an advantage.

Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skill	Problem Solving at SCQF level 4
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Core Skill component	None
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There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of the Unit Specifications for this Course.

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.

This Unit is included in the NPA in Local Food Production at SCQF level 6; however it can also be delivered as a free-standing Unit or as part of another relevant programme.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

National Unit specification: Statement of standards

Unit title: Primary Food Production: Aquaculture

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Describe key aspects of aquaculture.

Performance Criteria

- (a) Describe the basic characteristics of a chosen fish.
- (b) Describe the key requirements of a chosen fish.
- (c) Describe the symptoms of common diseases and parasites of a chosen fish and describe suitable treatments.
- (d) Describe the feeding requirements of a chosen fish.

Outcome 2

Assist in fish production.

Performance Criteria

- (a) Produce a basic plan for the raising of a chosen fish.
- (b) Assist in the preparation of a suitable environment for a chosen fish.
- (c) Check the health of the fish regularly and recommend the appropriate action to remedy problems.
- (d) Contribute to ensuring that the nutritional requirements of the fish are met.
- (e) Ensure that all health and safety requirements are met.

Outcome 3

Evaluate success.

Performance Criteria

- (a) Review the production process in relation to the plan.
- (b) Review the success of the aquaculture activities.
- (c) Review the success of dealing with health issues.
- (d) Evaluate the growth and quality of the fish.
- (e) Reflect on own development.

National Unit specification: Statement of standards (cont)

Unit title: Primary Food Production: Aquaculture

Evidence Requirements for this Unit

Evidence is required to demonstrate that learners have achieved all Outcomes and Performance Criteria.

Outcome 1

Written and/or recorded oral evidence is required to demonstrate that the candidate can:

- (a) Describe the following basic characteristics of the chosen fish:
 - ◆ Life stages
 - ◆ Species characteristics
 - ◆ Reproduction
- (b) Describe a minimum of 4 key aquacultural and environment requirements of the chosen fish.
- (c) Describe the symptoms and treatments for a minimum of 5 common diseases and/or parasites in the chosen fish.
- (d) Describe the different feeding requirements for each stage of the chosen fish.

Outcome 2

Direct observation or photographic and/or video evidence is required to demonstrate that the candidate can:

- (a) Produce a basic plan, including a risk assessment, for raising a chosen fish for a period of at least 5 months.
- (b) Assist in the preparation and maintenance of a suitable environment for the chosen fish.
- (c) Monitor the health of the fish on a regular basis and contribute to taking the appropriate action to remedy any health issues and keep accurate records.
- (d) Contribute to ensuring that the nutritional requirements of the fish are met and accurate records are kept.
- (e) Ensure that all health and safety requirements are met with reference to the risk assessment.

Outcome 3

Written and/or recorded oral evidence is required to demonstrate that the candidate can:

- (a) Review the production process in relation to the plan and highlight any changes to the plan including explanations.
- (b) Review the success of the aquaculture activities.
- (c) Review the success in dealing with health issues, with reference to the records kept.
- (d) Evaluate the growth and quality of the fish, with reference to the feeding records kept.
- (e) Reflect on the knowledge and skills they have gained.

This Unit lends itself to a holistic assessment where the fish selected for Outcome 1 are raised in Outcome 2 and the records produced in Outcome 2 inform the evaluation required in Outcome 3.

An integrated portfolio of evidence could be produced to provide evidence for all three Outcomes.



National Unit Support Notes

Unit title: Primary Food Production: Aquaculture

Unit Support Notes are offered as guidance and 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

Throughout this Unit the term 'fish' has been used throughout to refer to range of species farmed in Scotland including both marine and fresh-water finfish and shellfish. The typical species are expected to be:

- ◆ Salmon
- ◆ Rainbow Trout
- ◆ Sea Trout
- ◆ Halibut
- ◆ Mussels
- ◆ Oysters
- ◆ Scallops

Suggested topics and themes that could be covered in this Unit are given below for each Outcome.

Outcome 1: Describe the key aspects of aquaculture.

- (a) Describe the following basic characteristics of the chosen fish:
- ◆ The life stages of the chosen fish should be identified and the learners should be able to recognise them with confidence.
 - ◆ A survey of the characteristics of the chosen species.
 - ◆ The reproductive biology of the chosen fish to include reproductive structures, breeding cycles and spawning.
- (b) Describe a minimum of four key aquacultural and environment requirements of the chosen fish:
- ◆ Learners should be able to describe the fundamental requirements for the chosen fish in order to ensure good animal welfare.
 - ◆ The Five Freedoms of animal welfare could be discussed in relation to keeping fish (Farm Animal Welfare Council — FAWC).

National Unit Support Notes (cont)

Unit title: Primary Food Production: Aquaculture

- (c) Describe the symptoms and treatments for a minimum of five common diseases and/or parasites in the chosen fish.
 - ◆ Learners should be able to recognise the symptoms of at least five of the most common diseases and/or parasites affecting the chosen fish and be able to describe the appropriate treatments.
- (e) Describe the different feeding requirements for each stage of the chosen fish:
 - ◆ Learners should be able to describe the feeding requirements for the chosen fish according to the Company policy and best practice
 - ◆ An understanding that feeding requirements change at different life stages is expected.

Outcome 2: Assist in fish production.

- (a) Produce a basic plan, including a risk assessment, for raising a chosen fish for a period of at least five months:
 - ◆ Learners should produce a basic plan for the raising of the chosen fish for a period of at least 5 months.
 - ◆ It would be expected that there will be partnership working with a local fish farm and that the learners will not be keeping their own fish but working within the existing setup. The plan that they would draw up would reflect the aquaculture practices of the fish farm.
 - ◆ The plan must give consideration to the welfare of the fish.
 - ◆ The scale of the fish raising enterprise will reflect the facilities at the fish farm.
 - ◆ Whilst desirable, it will not be necessary to continue the enterprise to the natural end point of the sale of the finished fish.
 - ◆ A risk assessment must be prepared by the learner and approved by the teacher/tutor.
- (b) Assist in the preparation and maintenance of a suitable environment for the chosen fish:
 - ◆ Learners will be expected to contribute to the preparation and maintenance of a suitable environment for the chosen fish.
- (c) Monitor the health of the fish on a regular basis, taking the appropriate action to remedy any health issues and keep accurate records:
 - ◆ Regular health checks should be carried out by the learners, under supervision, and they should contribute to taking appropriate action to remedy problems.
 - ◆ Accurate records should be kept throughout and photographs could be taken to provide a visual record of ailments encountered.
- (d) Contribute to ensuring that the nutritional requirements of the fish are met and accurate records are kept:
 - ◆ Regular checks on the condition of the fish should be made and the learners should contribute to ensuring that the Company policy on feeding is followed.
 - ◆ Accurate records should be kept throughout and photographs could be taken to provide a visual record of the fish growth and development.

National Unit Support Notes (cont)

Unit title: Primary Food Production: Aquaculture

- (e) Ensure that all relevant health and safety requirements are met with reference to the risk assessment:
 - ◆ The learners should follow the prepared risk assessment and must comply with all relevant health and safety legislation.

Outcome 3: Evaluate success

- (a) Review the production process in relation to the plan and highlight any changes to the plan including explanations:
 - ◆ The learners should review the extent to which the raising of the fish adhered to the original plan.
 - ◆ It is to be expected that circumstances will have arisen that may have resulted in the plan being changed — these changes and the reasons for the change should be recorded and their success considered.
- (b) Review the success of the aquacultural activities:
 - ◆ The success of each process involved in the raising of the fish should be considered in relation to the Outcome achieved.
- (c) Review the success of dealing with health issues, with reference to the records kept:
 - ◆ A review of the success in dealing with any health issues that affected the fish should be carried out by the learners.
- (d) Evaluate the growth and quality of the fish, with reference to the feeding records kept:
 - ◆ An assessment of the quality of the fish should be made
 - ◆ Measurements and photographs should be used wherever possible
- (e) Reflect on the knowledge and skills they have developed:
 - ◆ Learners should be encouraged to reflect on the skills and knowledge that they have developed while working at the fish farm.

Guidance on approaches to delivery of this Unit

This is primarily a practical Unit which includes the preliminaries of planning and concludes with the evaluation of success. The practical work involves learners contributing to the raising of a chosen finfish or shellfish for food. The species chosen and the scale of the enterprise will depend on the facilities that are available at the fish farm, as will the level of contribution of the learners.

This Unit can only be undertaken if a partnership has been established with a local fish farm and the Company are able to accommodate the needs of learners.

Outcome 1 is intended to give a grounding in the culture of the chosen fish as well as providing some basic, relevant biological background. It would be expected that the Company would have established procedures and plans to which the learners could contribute and that the Company would train the Learners in the necessary skills and techniques required.

National Unit Support Notes (cont)

Unit title: Primary Food Production: Aquaculture

It is essential that the learners develop a 'feel' for the species characteristics of the chosen fish, that they understand the reproductive biology of the animal together with its nutritional requirements and health issues.

This Outcome is likely to involve a mixture of practical activities and classroom research, preferably with the classroom element used to reinforce the lessons learnt in the field, rather than the other way around. The classroom activities could be a combination of teaching and guided research, with the potential for learners to feed back their findings to their peers.

In **Outcome 2**, learners have the opportunity to contribute to the development of their chosen fish over a period of at least five months and to tend to them to achieve the best possible quality of Outcome. They will be working within the plans and policies of the Company but should understand what they are doing and why they are doing it.

As raising fish is a long process it will only be possible for learners to participate in a 'snapshot' within the overall process. However they should produce their basic plan which outlines the whole process and details the part which they will be able to play.

Part of the planning must include their own risk assessment of the activities that they will carry out and this should be approved by the Teacher/Tutor, ensuring that it complies with all relevant health and safety regulations.

The learners will put into practice some of what they have learnt in Outcome 1, paying careful attention to the nutritional requirements and health of the fish. It is important that they maintain detailed and accurate records throughout the production period.

Outcome 3 involves an evaluation of the production process and there must be time available at the end of the Unit to allow for detailed evaluation to be undertaken.

The evaluation should provide an opportunity to reflect on their contribution to the original plan and to review the extent to which the production process adhered to it. Where changes were made, an explanation for the reasons behind them should be given. The learners should make reference to their records in order to evaluate the success of their work, their involvement with the feeding regime and the how any diseases were treated. Finally they must make an evaluation of the overall quality of the fish that they have worked with.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Outcome 1: Describe the key aspects of aquaculture

The key aspects of aquaculture could be presented in separate reports or in a single report. The report(s) could be in the form of a written document, a detailed poster or a recorded oral presentation to the group.

National Unit Support Notes (cont)

Unit title: Primary Food Production: Aquaculture

Outcome 2: Produce fish

A basic Production Plan, outlining the complete process, should be presented in the form of a written document. A part of this plan will be contributed to by the learners and their contribution will be referred to in the evaluation. Detailed records of the aquaculture, including the feeding regime and disease control measures must be presented as a working document.

Outcome 3: Evaluate success

The evaluation of the whole process could take the form of a written document, a detailed poster or a recorded oral presentation to the group.

Whatever form the reports take, they must reflect the level of the qualification at SCQF level 6.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Opportunities for developing Core and other essential skills

There is no automatic certification of Core Skills or Core Skills components in this Unit, however there may be opportunities to develop the Core Skills of *Communication*, *Numeracy*, *Information and Communication Technology (ICT)*, *Problem Solving* and *Working with Others* all at SCQF level 6.

The evidence generated for **Outcome 1** and the planning aspect of **Outcome 2** could provide opportunities to develop either the Written or Oral component of *Communication* and the Using Numbers component of *Numeracy*.

The research elements of Outcomes 1 and 2 could provide opportunities to develop the Core Skill of *Information and Communication Technology (ICT)* (both Accessing Information and Providing/Creating Information components).

The practical elements of this Unit (Outcome 2) will provide opportunities to develop the Core Skills of *Problem Solving* and *Working with Others*.

In addition to the Core Skills noted above there may also be opportunities to develop other essential skills, especially in the context of this Unit, in Employability and Sustainable Development.

National Unit Support Notes (cont)

Unit title: Primary Food Production: Aquaculture

This Unit has the Core Skill of Problem Solving embedded in it, so when candidates achieve this Unit their Core Skills profile will be updated to show that they have achieved Problem Solving at SCQF Level 4.

History of changes to Unit

Version	Description of change	Date

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General information for learners

Unit title: Primary Food Production: Aquaculture

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is designed to provide you with the opportunity to undertake practical work in contributing to the raising of finfish or shellfish at a fish farm, in order to help you to develop practical skills and knowledge for working in aquaculture and food production.

In **Outcome 1** you will develop background knowledge of the biology and characteristics of a finfish or shellfish at the fish farm, aquaculture techniques including disease control and satisfying the nutritional requirements of the fish. **Outcome 2** is essentially the practical component where you will contribute to raising the fish, using appropriate aquaculture techniques, having first prepared a detailed Production Plan which will outline the whole production process. You will keep detailed and accurate records throughout your part of the production process. In **Outcome 3** you will evaluate the success of your part in the production, referring back to your original plan and using your records.

You will have the opportunity to carry out independent research throughout the Unit, particularly in **Outcome 1**, and then to report back your findings to your peers. The Unit will be assessed Outcome by Outcome and you will be required to produce separate reports to summarize your findings. The **Outcome 2** report will be in the form of a Production Plan, where you will outline how the fish are raised, the part you will play and your detailed records of your actual contribution to the production process. The **Outcome 3** report will be an evaluation of the process and will refer back to your original plan.

The reports could be in a variety of forms, for instance a written document, a detailed poster or a recorded oral presentation to the group. You will need to consider what would be the most appropriate format to convey your findings from each Outcome.