



Unit 31: Nursery Stock Production

Delivery guidance

Approaching the unit

Unit 31: Nursery Stock Production' is an optional unit for the 'Level 3 Extended Certificate' and 'Foundation Diploma' in Horticulture and is assessed internally. The focus of this unit is for learners to gain an understanding about field- and container-grown stock production (the range of plants can be found listed in the specification). Learners will then be able to competently carry out practical activities such as planning resource requirements, and the cultivation and establishment of the plants available.

Learners can work with a variety of plants while completing the unit, so it is the centre's prerogative to use those species that are most appropriate and locally relevant. It is essential that learners study the production of both field- and container-grown nursery stock on a commercial scale for this unit. Arranging visits to local nurseries would be extremely beneficial for learners in order to extend their knowledge of the subject and experience a busy nursery environment.

Throughout this unit, learners should be encouraged to carry out independent research from a range of different sources including books, the internet, tutors, employers, subject experts, colleagues, catalogues and magazines. They will also need to maintain accurate records of the work undertaken, so it will be important to introduce organisational skills early on in the unit.

Health and safety considerations are a critical requirement when delivering the content. It must be made clear to learners how to identify risks and hazards before beginning any practical activity and how to use tools and equipment correctly and safely. This is an essential requirement for learners working on site and completing work experience with an employer.

Encourage independent working within small groups or teams but also ensure that all learners produce their own individual evidence for the assignments.

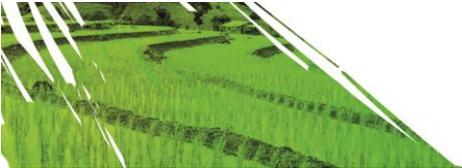
Delivering the learning aims

There needs to be a structured approach in the method of delivery and the timing of this unit due to growing seasons and production timings. This unit requires suitable nursery areas to be available, which will be linked to the plants being produced.

Learning aims may be combined so that theory is taught alongside practical tasks, which will place the unit into context for learners. Other units that could be easily linked to this unit include:

- *Unit 2: Estate Skills*
- *Unit 4: Developing a Land-based Enterprise*
- *Unit 27: Identification, Planting and Care of Plants* (as learners are required to identify a range of plants using botanical names as well as planting and caring for plants)
- *Unit 29: Plant Propagation Activities* (as learners will gain an understanding about the production of plants).

For learning aim A, learners are to investigate the requirements of nursery stock production. Visits to local nurseries would be extremely beneficial and would enable learners to



experience large-scale production, looking at different growing areas including beds, fields, production areas and irrigation. They will be able to observe field- and container-grown stock at different stages of development first-hand.

A full range of plants and production types needs to be available to learners when exploring nursery stock, which will include trees, shrubs, fruit, conifers, hedging, climbing plants, herbaceous perennials, heathers, grasses, alpins and roses. Where these are not all available at the centre, visits to local garden centres should be arranged to support the learning of different plant categories.

Learners will also explore the growing conditions of nursery stock and there will be opportunities to develop learners' skills with soil and growing media, which will link directly to *Unit 2: Plant and Soil Science* as well as plants' requirements. Tutors can link practical soil testing and hand-texturising activities to learning, so that learners can experience and identify different soils and growing media components for both field and container stock.

It is critical that learners are introduced to the relevant tools, equipment and materials and told how to use these appropriately and safely. Tutors should demonstrate robust safe working practices to ensure that learners develop their own skills in this area. The key principles of legislation and regulations regarding safe working listed in the unit specification should be linked here, with tutors introducing safety signs, posters and mandatory requirements. Examples of equipment could include forks, lifting and digging spades, secateurs, trowels; materials such as string lines, root-ball netting, labels; and machinery such as under cutters tractors and trailers. Staff should also demonstrate the correct use of suitable personal protective equipment (PPE) throughout the unit.

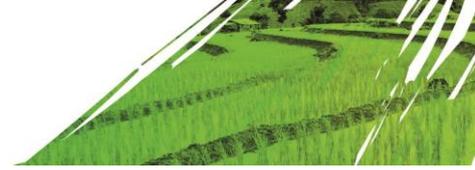
To complete learning aim A, learners will be required to explore the factors that affect plant growth and establishment. This could be achieved during crop monitoring and inspection activities. Learners could create monitoring documents and keep records of growth indicators including plant requirements for water, food, space, environmental conditions and protection. In addition, managing the health of plants will be key to their success. Learners should be taught the importance of monitoring plant health and how to positively identify threats, including all those listed in the unit content (see the specification). This can be achieved with identification tests using actual examples or picture cards and comparisons between similar signs of poor health in plants.

Learning aims B and C can be taught together with learners planning their nursery stock production, and then carrying it out following their planned activities and timings.

From previous research completed in learning aim A, learners can be arranged in small groups to discuss planning for nursery stock production. Tutors can give learners example documents to help learners plan start dates and when plants will be ready for their next stage (e.g. either potting on or selling), as well as the resources required to produce nursery stock including cost and availability.

Learners can then present their timelines to the class, prompting discussions as a whole group so that they can then finalise their plans making any changes if required. Tutors could give learners scenarios or case studies of problems that could be faced to encourage learners to think about contingency planning for any production problems that may occur, including assessment and management of hazards and risks in the work area. Learners will create their own individual timelines and then ensure that they follow them when carrying out the cultivation and establishment of their selected plants.

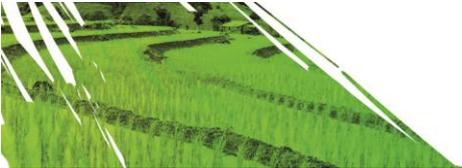
Learners will prepare a growing area allocated to them by their tutor who will consider small group working where required. Learners will show their own working during tasks,



by gathering evidence accordingly through annotated photo storyboards or video evidence, and tutor observation. This will include:

- the correct selection of tools and equipment
- production tasks throughout the growth stages of their nursery stock
- providing correct growing conditions for the plants being grown
- safe working practices
- correct waste disposal
- maintenance and monitoring activities
- plant health checks.

Throughout the practical tasks, learners will need to demonstrate health and safety awareness, as well as evidence that they know how to use tools and equipment safely, wearing the correct PPE required at all times for the tasks being completed.



Assessment model (in internally assessed units)

Learning aim	Key content areas	Recommended assessment approach
A Explore the requirements for the production and establishment of field- and container-grown nursery stock	A1 Plant suitability for field- and container-grown nursery stock A2 Site selection and growing conditions for nursery stock A3 Resource requirements A4 Factors affecting the management of plant growth and establishment	A report on the requirements and factors for the production and establishment of field and container plants as nursery stock
B Plan for the management and establishment of given field and container nursery stock	B1 Planning for nursery stock production	Planning documents showing the timelines of activities that cover the key tasks, techniques and factors for the production and establishment of field-grown and container-grown nursery stock A portfolio of evidence of practical tasks carried out
C Undertake production and establishment activities for specified nursery stock	C1 Cultivation, establishment and harvest of nursery stock	

Assessment guidance

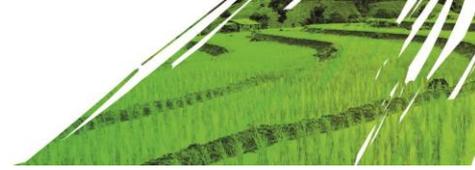
This unit is assessed internally with two summative assignments, which will examine learner knowledge through written tasks and competency skills through practical application.

For learning aim A, learners are to write a report on the production requirements for a range of nursery stock plants. Learners should be encouraged to carry out independent research from a range of different sources and carry out their investigations on both field- and container-grown plants. Learners should name plants botanically throughout their work. Arranging learner field trips to a range of nurseries that produce different plants would be extremely beneficial and would support learners in their research for this aim, as they will be able to question experts in the field. Within their research, learners will also report on the factors that can affect nursery stock production, which will include growing conditions for nursery stock plants, timings and health.

Learners will use technical terminology related to nursery stock production throughout their reports and may choose to include video entries, photographic evidence and voice-recorded evidence in their investigations as appropriate.

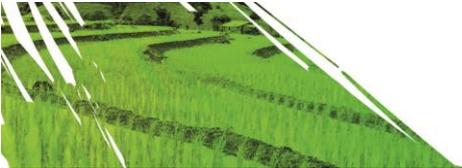
The second assignment is split into two parts to cover learning aims B and C, and learners are to produce a portfolio of evidence. The first part is a plan regarding the planting and maintenance of nursery stock plants, which includes accurate timelines on activities needing to be carried out. Links to learning will be made that show that learners have considered plant requirements to ensure they are successful.

The second part of the assignment will be presented as a series of annotated photographic evidence sheets, which show tasks being completed. Learners will be able to identify plants



correctly using botanical nomenclature and explain the tasks completed. They will also be able to explain why tasks were being carried out and demonstrate evidence of safe working practices throughout.

Tutor observation records will be included in the portfolio that evidences the tasks being carried out to a high standard. Observations will also confirm that learners have selected the correct tools and equipment, shown clear consideration of the environment and have worked together effectively.



Getting started

This provides you with a starting place for one way of delivering the unit, based around the recommended assessment approach in the specification.

Unit 31: Nursery Stock Production

Introduction

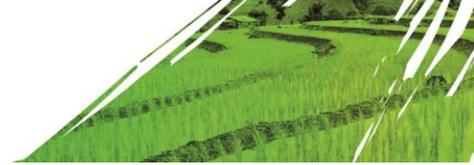
Centres should have access to nursery stock facilities for both field- and container- grown production. This can be at the centre or accessed by engaging with local employers to suit learner needs.

Learners will be taught all aspects of growing both field- and container-grown nursery stocks. They will take part in practical growing activities that will include the production, maintenance, monitoring and getting plants ready for sale. This will happen over the course of several weeks, so it will require careful planning to ensure that timings are correct for the plants being grown.

Learners should be encouraged to gather a range of practical evidence that may include videos, diary entries, blogs, voice recordings and photographic evidence, as this will assist them with their summative assessment for learning aims B and C.

Learning aim A – Explore the requirements for the production and establishment of field- and container-grown nursery stock

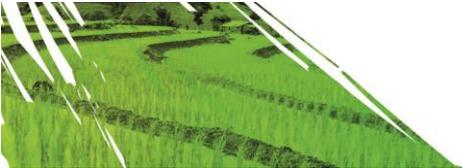
- Classroom-based activities can be delivered to give learners the opportunity to investigate categories of nursery stock and types of production used for both field- and container-grown stock plants. Tutors can deliver plant identification activities, which should include actual examples of plants for learners to study and identify. Learners should have access to plants growing naturally where possible, as well as looking closely at the anatomy and various parts of plants that will aid their identification. Nursery stock categories should also be linked to plant naming, in order to support learners' understanding of different plant types.
- Tutors can arrange for visits to local employers so that learners can examine a range of different nurseries, along with talks from employers where possible. Learners to be provided with instructions to investigate the different production tasks and the factors that may affect production. Visits can be completed throughout the delivery of the unit and should include plants that are not available at the centre (or grown on a larger scale).
- Learners should be provided with a site and some named plants, and tutors can task them with growing the named plants so that learners can consider and fully investigate what is required for growing field- and container-grown nursery stock in the selected area. This will include growing media, growing and production areas and services available on site.
- Classroom-based activities exploring resource requirements for their given sites for both field- and container-grown nursery stock will be necessary. Learners are to present information to the class, which will include their investigations for growing named plants from the previous session. In addition, the presentation should also include the requirements for buildings and structures, which will allow learners to make links to any nursery visits.



- Tutors can set up a practical session on the safe and correct use of tools, machinery, equipment and materials. Tutor can demonstrate each item and then ask learners to form into small groups, giving them a task to select the tools, machinery and equipment required. They must also identify the risks and hazards associated with these tasks and demonstrate the safe use of all items to each other.
- Classroom-based activities on the factors affecting the management of plant growth and establishment, assessment of areas, monitoring and ways to manage plant growth and environmental impact will be necessary. Learners are to create monitoring checklists that they can complete throughout plant production activities.
- Tutors can set up a series of practical activities with example plant inspections in order for learners to manage health and investigating pests, diseases and disorders (from those listed in the unit specification) and measures to ensure plants meet specifications. Learners are to test out their checklists made in the previous session(s) by monitoring the plant examples provided and finding solutions to improve plant health. For example:
 - plants that are tangled together require more space
 - plants that are wilted may need better watering facilities
 - yellowing plants may need a high nitrogen feed.
- Tutors should use real plant examples or, if unavailable, photographs or images for learners to assess.
- Classroom-based learning on the requirements of nutrients and water will be required. Tutor to bring in example feeds in a range of formulas including slow release pellets, liquid, granular, powders, base dressing and top dressing. Learners are to investigate nutrient content and assess their potential effect on plant health and growth improvement. They can form into pairs or small groups to share the information that they have discovered, and then feed back to the class.
- Tutors can arrange a series of field trips to a range of nurseries that produce different plants, in order to help support learners with their reports for their summative assessment activity. Tutors can hold a Q&A session with employees at the nursery, or one-to-one session with learners to help answer any queries they may have regarding the assessment.

Learning aim B – Plan for the management and establishment of given field and container nursery stock

- Classroom-based planning for production and establishment of given nursery stock will be necessary. Learners are to investigate plant and production requirements for named plant(s), including risk assessing area on a given or a blank risk assessment pro forma, and planning resource requirements by writing a list of requirements. Learners are to then share information in pairs with their tutor.
- Tutors can then give learners classroom activities where learners must examine and assess the production area, making their own notes on the factors that could affect planning and production including:
 - natural growth times of their stock
 - planting
 - maintenance and harvesting/sales
 - contingency planning for bad weather or other problems
 - costing and pricing.
- Tutor to introduce learners to timelines and show them some example planning documents to aid them in their timeline designs. Learners are then to form into small groups to discuss their timeline formats and decide on the timeline that is most suitable for



the selected production area.

- Learners are to complete a planning task spider diagram in small groups, where they will pull together some of the key features of a timeline from their previous research and any visits to nurseries. The groups will produce rough timelines for given plant(s) and area that include clear timings, presenting these to their tutor who will provide additional guidance where required. This will provide a foundation for learners to produce their own individual timelines.

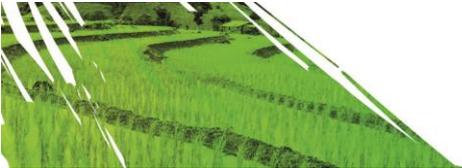
Learning aim C – Undertake production and establishment activities for specified nursery stock

- Tutor to deliver a selection of classroom and practical activities for learning aim C. Before undertaking practical tasks, learners are required to identify hazards of the selected area, assessing and minimising any risks. (Tutor can link this to risk assessments for the 'Health and Safety' unit.)
- Tutors are to introduce learners to the relevant laws/legislation and those codes of practise/regulations relating to tasks. Tutor to give each learner an example of a key legislation or regulation requirement, and learners are then to conduct independent online research.
- Tutors will then write down all of the key legislation and regulations on flipchart pages for learners to add a summary of the key facts that they have researched. Learners will move around the room to different laws/legislation and add their findings until the flipcharts are full. Tutor to then read out the main points to the class and discuss together.
- Learners to undertake a series of practical activities where they are to facilitate the production of the nursery stock available to a given suitable area over a period of time. Tutor to group learners where required and discuss their plans individually (or in small groups if necessary).
- Learners are to demonstrate the safe working practices required during practical tasks. They will be observed by the tutor when they are:
 - preparing growing areas
 - selecting and using correct tools and equipment
 - minimising environmental damage while working
 - completing tasks relevant to plants
 - carrying out health checks and monitoring.
- Learners must ensure that they leave the area clean and tidy after each task and dispose of waste correctly. In addition, learners will gather their own evidence in the form of photographs or videos for their summative assessment activity.
- Learners are to demonstrate safe working practices during practical lessons. Learners will be observed by tutors when planting field- and container-grown nursery stocks and when providing correct growing conditions. Learners will select and use the correct tools and equipment safely, minimising any environmental damage while working, and complete tasks relevant to plants, health checks and monitoring. Learners must ensure that they leave the area clean and tidy after each task and dispose of waste correctly. In addition, learners will gather their own evidence in the form of photographs or videos for their summative assessment activity.
- Learners are to carry out health checks throughout their practical tasks. They are to produce check sheets to record their monitoring over a period of time, which will demonstrate strong record keeping skills. The checklists could be included in learner portfolios for the summative assessment activity.
- Learners are to carry out practical tasks of harvesting and preparing plants for sale, ensuring that plants meet specifications, are checked for high quality and that they are correctly labelled. Learners will be observed by tutors when completing tasks and will gather their own evidence



in the form of photographs or videos.

- Classroom-based activities and directed study time following practical tasks are required for learners to produce a portfolio of practical evidence that demonstrates learning for both learning aims B and C. This should include timelines, practical observations completed by tutor, annotated photographic evidence and videos.



Details of links to other BTEC units and qualifications, and to other relevant units/qualifications

- Unit 2: Estate Skills
- Unit 4: Developing a Land-based Enterprise
- Unit 27: Identification, Planting and Care of Plants
- Unit 29: Plant Propagation Activities.

Resources

In addition to the resources listed below, publishers are likely to produce Pearson-endorsed textbooks that support this unit of the BTEC Internationals in Agriculture/Horticulture/Land-based subjects. Check the Pearson website (<http://qualifications.pearson.com/endorsed-resources>) for more information as titles achieve endorsement.

Textbooks

Adams CR, Bamford KM and Early MP, *Principles of Horticulture*, Butterworth- Heinemann, 2008 ISBN 0750686944 – an excellent book for learners on growing plants

Mason J, *Nursery Management*, 2004 online edition – a clear and useful book including information on wholesale and retail growing

Hillier JG and Lancaster R, *The Hillier Manual of Trees and Shrubs*, Royal Horticultural Society, 2014 ISBN 9781907057472 – a fully descriptive book about trees and shrubs

Journals

Horticulture Week (Haymarket Group) – weekly information on nursery growers and new products available to the sector

Websites

'rhs.org.uk' – for more information about plant pests and diseases, sector updates and horticultural advice and guidance

'plantsnap.com' – for more information about plant identification, pests and diseases, sector updates and horticultural advice and guidance

'Health and Safety Executive (HSE)' – search this useful UK website for 'transporting and moving plants in horticulture'.

'The National Gardening Association' – search the website for the 'Learning Library' and then look for 'Plant Care Guides' for a vast range of plants and information regarding their requirements.

Pearson is not responsible for the content of any external internet sites. It is essential for tutors to preview each website before using it in class so as to ensure that the URL is still accurate, relevant and appropriate. We suggest that tutors bookmark useful websites and consider enabling learners to access them through the school/college intranet.