

RHS Qualifications

RHS Level 2 Certificate in the Principles of Garden Planning, Establishment and Maintenance

Qualification Specification

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1. RHS Qualifications Contact Details

RHS Qualifications is the Awarding Organisation of the Royal Horticultural Society.

RHS Qualifications
RHS Garden Wisley
Woking
Surrey
GU23 6QB
UK

Tel: 01483 226500

Email: qualifications@rhs.org.uk

Approved Centre Web Portal: www.rhsq.org.uk

2. Equality and Diversity Policy Statement

RHS Qualifications is committed to policies that will promote equal opportunities in all its operations, regardless of age, disability, ethnic origin, gender, marital status, religion, sexual orientation or any other factor.

RHS Qualifications is committed to ensuring that there is no unfair discrimination in any of its operations and will take into account all current legislation in relation to the equality of opportunity.

RHS Qualifications will constantly monitor and review its policies and practices pertaining to equal opportunities, to ensure that they remain consistent with its equal opportunities objectives and continue to comply with all relevant legislation.

RHS Qualifications will strive to make awareness of and respect for equality and diversity, an integral part of the culture of the organisation.

A copy of the RHS Qualifications Equality and Diversity Policy is available on the Approved Centre Web Portal.

3. RHS Level 2 Certificate in the Principles of Garden Planning, Establishment and Maintenance

3.1 Introduction

This qualification provides a route to employment in professional horticulture by assessing knowledge of the principles underpinning horticultural practices, and supports career development for those already working in the profession. It also provides a foundation for further learning or training in the field of horticulture.

There are no pre-requisites for entry to the qualification.

The qualification is accredited within the Qualifications and Credit Framework.

Accreditation Number:500/8295/4

3.2 Credit Value

The qualification has a credit value of 14.

This equates to 140 learning hours. Learning time is defined as the time taken by learners at the level of the qualification, on average, to complete the learning outcomes of the units to the standard determined by the assessment criteria.

Guided Learning Hours (GLH) are the number of hours of face-to-face tutor contact recommended to complete the qualification. Guided Learning Hours are always less than the total learning hours, as learners are expected to complete a certain amount of study in their own time. The Guided Learning Hours for the qualification are 107 hours.

3.3 Teaching Pattern

The qualification is designed to be studied on a part-time basis. No particular teaching pattern is specified, and centres offering courses leading to the qualification are free to define their own teaching structure and teaching hours.

3.4 Qualification Structure

The qualification will be awarded to those who gain the credits for the following four mandatory units:

RHS Ref	Unit	Credits	Level
R2111	Understanding garden features, plant selection and planning Unit reference number F/601/0251	5	2
R2112	Understanding the choice, establishment and maintenance of garden plants and lawns Unit reference number T/601/0251	3	2
R2113	Understanding the production of outdoor vegetables and fruit Unit reference number A/601/0264	3	2
R2114	Understanding protected environments and their use in plant cultivation Unit reference number L/601/0267	3	2

3.5 Assessment

Each unit will be assessed by a separate written examination covering all learning outcomes specified in the unit.

Examinations must be taken in a centre approved by RHS Qualifications, or under arrangements for exceptional supervision agreed by RHS Qualifications.

Examinations must be conducted in accordance with the RHS Regulations for the Conduct of Examinations.

Examinations will be offered twice a year in February and June.

Past examination papers including the examiner's comments are published for the past six examination sessions. These are available for download under the appropriate qualification section of the RHS website.

3.6 Language

Examinations will be offered in English.

3.7 Learning Resources

There is a wide range of books and other learning resources published which support the studies of those learning horticulture. RHS Qualifications does not recommend or endorse any specific learning resources as meeting the needs of learners studying for RHS qualifications. Learners are encouraged to seek guidance from their tutors on which resources best support their studies, or to choose the most appropriate resources for their needs from the wealth of material available.

3.8 Grading

Credits for a unit will be awarded to a candidate who achieves a mark of 50% or more in the written examination for that unit.

Where a candidate achieves a mark of 70% or more in the examination for the unit, the credits for the unit will be awarded with commendation.

RHS Ref	Unit	Mark	Pass with Commendation	Pass
R2111	Understanding garden features, plant selection and planning	100	70	50
R2112	Understanding the choice, establishment and maintenance of garden plants and lawns	60	42	30
R2113	Understanding the production of outdoor vegetables and fruit	60	42	30
R2114	Understanding protected environments and their use in plant cultivation	60	42	30

Where a candidate receives credits with commendation in all four mandatory units, the qualification will be awarded with commendation.

4. Approved Centres

Centres wishing to offer examinations leading to RHS qualifications must be approved by RHS Qualifications.

Applications for approval should be sent to the Quality Assurance and Relationships Officer at the contact details in section 1.

5. Candidate Registration

Candidates should be registered for examinations in the units of the qualification through the RHS Qualifications Web Portal.

Approved Centres undertake to obtain on behalf of their learners a Unique Learner Number (ULN) and a learner record, unless the learner chooses not to have one.

If centres supply an email address for candidates at the time of registration, candidates will be invited to open an account on the RHS Qualifications Web Portal, and will be able to view their examination history, their current registrations, and their results when available.

6. Reasonable Adjustments and Special Consideration

RHS Qualifications is committed to ensuring fair assessment for all candidates, and will facilitate access to its qualifications through reasonable adjustments to assessment arrangements for candidates with an identified specific need. An example of a reasonable adjustment which could be made is the production of a modified examination paper for a candidate with a visual impairment.

Special consideration is given following the examination to candidates who are present for the examination but may have been disadvantaged by temporary illness, injury or adverse circumstances which arose at, or near, the time of examination.

Full guidance is provided in the document 'Guidance to Centres for Reasonable Adjustments and Special Consideration'. The document is available on the RHS website (www.rhs.org.uk), the RHS Qualifications Approved Centre Web Portal, or can be obtained from RHS Qualifications.

Applications for reasonable adjustments or special consideration must be made by the Approved Centre on behalf of the candidate. Application must be made within specified timescales.

7. Enquiry about Results service

The following service is available to candidates who have a query regarding their examination result:

Re-mark and Feedback

Re-marking of the examination paper by an independent examiner.
Feedback will be provided identifying areas of strength and weakness with constructive suggestions for improvement.

Candidates requesting a re-mark need to be aware that grades may go down as a result of the re-marking.

Applications for the 'Enquiry about Results Service' must be made through the Approved Centre where the candidate registered for the examination. This service will

be available for 28 days from the date of release of the results to Approved Centres on the RHS webportal.

8. Examination Dates

For a full list of examination dates please see the Qualifications and Credit Framework Examination Dates, this document is available on the Qualifications page on the RHS website, and on the RHS Webportal.

9. Fees

For a full list of fees please see the Qualifications and Credit Framework Fees Notice, this document is available on the Qualifications page on the RHS website, and on the RHS Webportal.

All fees are payable prior to confirmation of service or entry for the examination.

Late Entries

RHS Qualifications publishes annually, and distributes to Approved Centres, the closing dates of entry for each examination for the following year.

Entries submitted after the published closing date will be subject to a late entry fee. The total fee charged for late entries is twice the standard examination fee for each unit

Replacement Certificate (if lost, damaged or destroyed)

The fee for a replacement certificate can be found on the Qualifications and Credit Framework Fees Notice. Please send your request to the Qualifications Department.

Re-mark & Feedback

The fee for a remark and feedback can be found on the Qualifications and Credit Framework Fees Notice.

If a re-mark results in an upgrade of the result, the fee paid will be refunded.

10. Exemptions

The 'Regulatory arrangements for the Qualifications and Credit Framework' allow exemptions to be granted for units based upon certificated achievement in other qualifications. RHS Qualifications will grant exemption from specified units in RHS QCF qualifications where a candidate has passed certain components of RHS qualifications in the National Qualifications Framework (current RHS qualifications).

- All requests for exemption will be reviewed on a case by case basis. Applications must be made to RHS Qualifications and an administration fee will be charged
- Candidates will need to have obtained 50% of the available marks for the NQF component (within the Paper/Module) in order to obtain exemption from the QCF unit
- All exemptions are treated as equivalent to a pass. No certificate or credit is awarded for units for which exception has been granted.

Applications for exemptions must be made through the Approved Centre where the candidate is registered. The fee for applying for exemptions can be found on the Qualifications and Credit Framework Fees Notice.

RHS Qualification	Component	Exemption given for:
Level 2 Horticulture II	Horticultural Plant selection, Establishment and Maintenance	Understanding the choice, establishment and maintenance of garden plants and lawns
Level 2 Horticulture I	Outdoor Food Production	Understanding the production of outdoor vegetables and fruit
Level 2 Horticulture II	Protected Cultivation (Horticulture)	Understanding protected environments and their use in plant cultivation

11. Appeals Procedure

An Appeals procedure exists to conduct appeals lodged by candidates against decisions made by RHS Qualifications, concerning their examination performance, the granting of an award and/or the closure of their entry to an award on academic grounds.

The procedure is also followed in cases where there is irregularity or malpractice in the conduct of examinations and where RHS Qualifications has imposed a penalty on a candidate, tutor or invigilator, and the Centre wishes to appeal against this decision after results are published.

A copy of the procedure is available on the RHS Qualifications Web Portal and on the RHS website.

12. Policy on Malpractice and Maladministration

Malpractice consists of those acts which undermine the integrity and validity of the assessment or examination, the certification of qualifications and/or damage the authority of those responsible for conducting the assessment, examination and certification.

RHS Qualifications does not tolerate actions or attempted actions of malpractice by learners or centres in connection with RHS qualifications. RHS Qualifications may impose penalties and/or sanctions on candidates or centres where incidents, or attempted incidents, of malpractice have been proven.

A copy of the full policy is available on the RHS Qualifications Web Portal and on the RHS website.

Understanding garden features, plant selection and planning

RHS reference number: R2111

Unit reference number: F/601/0251

Unit guided learning hours: 38

Unit Level: Level 2

Credit Value: 5

Unit purpose and aim(s): This unit will enable candidates to develop an understanding of basic surveying and design principles and to apply them to basic garden design and planning requirements. Additionally, the unit will enable candidates to develop an understanding of plant selection for soft landscaping.

Learning Outcomes

The learner will:

1. Know how to carry out and record a garden survey.
2. Know how to carry out a site appraisal and record essential data.
3. Understand basic garden planning principles and the elements that contribute to a good design.

Assessment Criteria

The learner can:

- 1.1 Describe how to identify potential hazards and risks on a site, including overhead and underground hazards (eg electric cables); unsafe buildings, features and trees; topography and existing features, e.g. watercourses and ponds.
- 1.2 Describe potential restrictions which may limit work on the site, including financial constraints; difficulties with access for plant, equipment and materials; topography (degree and extent of slopes); boundary constraints; and restrictions on the time the works can be carried out.
- 1.3 State what existing garden features need to be identified, including buildings, hard landscape features, and the trees and plants that are to be retained.
- 1.4 State why it is necessary to identify the existence of overhead and underground services.
- 1.5 Describe how to carry out basic linear surveying techniques, including the use of tapes, offsets and triangulation.
- 2.1 State what needs to be recorded when carrying out a site appraisal, including soil type, contour, aspect, microclimate, exposure and drainage.
- 3.1 Describe the relevance of garden planning principles to the production of a garden design that 'works', - one that follows accepted 'rules' or 'conventions', and which is pleasing to the eye.
- 3.2 State the meaning of the following terms: symmetry; asymmetry; colour; focal points.

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| 4. | Understand the characteristics of accepted garden design styles. | 4.1 | Describe the difference between formality and informality in garden design. |
| | | 4.2 | Describe the main characteristics of a knot garden, a landscape garden and a cottage garden. |
| 5. | Understand the effective and appropriate use of hard landscaping materials. | 5.1 | Describe a range of horizontal elements: paths, steps, patios and decking. Compare the benefits and limitations of a range of materials for each of the above, including concrete, paving and wood. |
| | | 5.2 | Describe a range of vertical elements: wall fences, screens, pergolas, furniture, statuary. For each of the above, compare TWO examples of natural and man-made materials used in their manufacture. |
| | | 5.3 | Describe rock gardens and water features. State TWO examples of manufactured and TWO of natural materials for EACH element. |
| 6. | Understand the effective use of soft landscaping elements. | 6.1 | Name appropriate grass species for the following types of lawn: hard wearing utility; high quality ornamental; shade tolerant. |
| | | 6.2 | Name FIVE evergreen and FIVE deciduous trees (large shrubs), suitable for planting in a domestic garden. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively. |
| | | 6.3 | Name FIVE evergreen and FIVE deciduous plant species, suitable for hedging or screening (including formal or informal use). State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively. |
| | | 6.4 | Name TEN deciduous and TEN evergreen shrubs suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively. |
| | | 6.5 | Name TEN herbaceous perennials suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively. |

- 6.6 Name TEN Alpine or Rock garden plants suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively.
 - 6.7 Name FIVE plants grown as biennials, which are suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively.
 - 6.8 Name TEN hardy plants grown as annuals, suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively.
 - 6.9 Name TEN half-hardy plants suitable for seasonal bedding. State details of their decorative merits, height and spread and site requirements and describe a situation where each could be used effectively.
 - 6.10 Name TEN patio or basket plants suitable for planting in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively.
 - 6.11 Name FIVE bulbs, corms or tuberous plants used for winter or spring interest, and FIVE for summer or autumn interest, in a variety of garden situations. State details of their decorative merits, height and spread and site requirements; describe a situation where each could be used effectively.
7. Understand how to incorporate key elements into a cohesive design.
- 7.1 Describe how elements of hard landscaping should be selected and used to ensure that a design is cohesive.
 - 7.2 Describe how elements of soft landscaping should be selected and used to ensure that a design is cohesive.
 - 7.3 Describe how other materials and items (e.g. garden furniture) should be selected and used to ensure that a design is cohesive.

8. Understand the importance of safe, healthy, environmentally-sensitive and sustainable development of garden sites.
- 8.1 Describe TWO hazards associated with EACH of the following: access; slope; location of features; water; electricity; materials; plants.
 - 8.2 State how the risks related to the hazards identified in 8.1 can be minimised by careful planning during the planning and design stage.
 - 8.3 Describe how the environmental sustainability of landscaping materials may affect choices made during the planning and design stage.
 - 8.4 State how sustainable practices in the maintenance of a garden can be integrated successfully during the planning and design stage.
 - 8.5 State how sustainable practices can be undertaken during the construction stage.

Understanding the choice, establishment and maintenance of garden plants and lawns

RHS reference number: R2112

Unit reference number: T/601/0263

Unit guided learning hours: 23

Unit Level: Level 2

Credit Value: 3

Unit purpose and aim(s): This unit will enable candidates to develop an understanding of plant selection, establishment and maintenance of a range of ornamental plants.

Learning Outcomes

The learner will:

1. Understand the choice of plants for seasonal display and their establishment and maintenance.

Assessment Criteria

The learner can:

- 1.1 Describe, in the context of seasonal displays, what is meant by the terms: bedding, hardy, half-hardy, tropical, edging, groundwork (infill) and dot plant ; give TWO plant examples of EACH
- 1.2 Explain the importance of F1 hybrid plants and the term 'hybrid vigour'. State FOUR specific plant examples.
- 1.3 Name TEN plants suitable for growing in an annual border.
- 1.4 Name TEN plants suitable for summer bedding displays.
- 1.5 Name FIVE plants suitable for spring bedding displays, including TWO bulbs (or corms or tubers).
- 1.6 Name TEN plants suitable for summer display in containers or hanging baskets.
- 1.7 Name FIVE plants suitable for winter display in containers or hanging baskets.
- 1.8 Describe the soil or growing media preparation, sowing or planting out of plants for seasonal display for the situations listed in 1.3 – 1.7.
- 1.9 Describe the routine maintenance of seasonal bedding, including control of weeds and common pests and diseases (aphids, slugs and snails, vine weevil, grey mould, powdery mildew) for the situations listed in 1.3-1.7.

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| <p>2. Understand the choice of herbaceous perennial plants and 'bulbs' for display, and how to grow them</p> | <p>2.1 Name TEN herbaceous perennial plants suitable for growing in an herbaceous border.</p> <p>2.2 Name FIVE herbaceous perennials suitable for growing in shade and FIVE suitable for use as ground cover.</p> <p>2.3 Name TEN bulbs or corms or tubers, of which FOUR should be suitable for growing in the border, FOUR for containers and FOUR for naturalizing.</p> <p>2.4 Describe the soil preparation, planting, routine maintenance and control of weeds, pests and diseases (aphids, slugs and snails, vine weevil, grey mould, powdery mildew, stem or bulb eelworm) required for growing herbaceous perennials and bulbs, corms or tubers.</p> |
| <p>3. Understand the choice of woody plants for display and their establishment and maintenance.</p> | <p>3.1 Name TEN trees suitable for growing in a domestic garden.</p> <p>3.2 Name TEN shrubs suitable for growing in a domestic garden.</p> <p>3.3 Name FIVE trees grown for winter interest and FIVE grown for autumn display.</p> <p>3.4 Name FIVE shrubs grown for winter interest and FIVE grown for autumn display.</p> <p>3.5 Name FIVE lime-hating trees or shrubs.</p> <p>3.6 Name FIVE bush roses suitable for growing in a rose bed, including cluster-flowered (floribunda) and large-flowered (hybrid tea) examples.</p> <p>3.7 Name FIVE climbers and FIVE wall shrubs suitable for a variety of garden situations including shaded and north-facing.</p> <p>3.8 Describe the soil preparation and planting for trees and woody shrubs.</p> <p>3.9 Describe the routine maintenance for trees and woody shrubs, to include pruning and the control of weeds and common pests and diseases (aphids, powdery mildew, black spot of roses, canker, coral spot, honey fungus).</p> |

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| 4. Understand the choice of alpine and rock garden plants and how to grow them | <p>4.1 Name FIVE alpine or rock garden plants for spring display and FIVE for summer display.</p> <p>4.2 Describe soil characteristics, soil preparation and routine maintenance for the display of alpine or rock garden plants in open soil.</p> <p>4.3 Describe choice of container, the characteristics and preparation of the growing medium, and the routine maintenance required for an alpine or rock garden display in containers.</p> |
| 5. Understand the planting and maintenance of a garden pool. | <p>5.1 Name TWO AQUATIC plants from each of the following groups: floating, deep-water, marginal and bog plants.</p> <p>5.2 Describe the planting and establishment of aquatic plants in a garden pool.</p> <p>5.3 Describe the annual maintenance of a garden pool, including possible controls for algae including blanket weed.</p> |
| 6. Understand the establishment and maintenance of lawns. | <p>6.1 State appropriate grass mixtures for the establishment of a high quality ornamental lawn and for a hard-wearing utility lawn.</p> <p>6.2 State the benefits and limitations of establishing lawns from seed.</p> <p>6.3 Describe the procedure for establishing a lawn from seed.</p> <p>6.4 State the benefits and limitations of establishing a lawn from turf.</p> <p>6.5 Describe the procedure for establishing a lawn from turf.</p> <p>6.6 Describe the annual maintenance programme for quality ornamental and for hard-wearing utility lawns.</p> <p>6.7 Describe the range of equipment used for mowing, feeding, scarifying and aerating lawns.</p> <p>6.8 Describe the symptoms of a range of common lawn pests and diseases, including red thread, Fusarium patch, fairy rings, leatherjackets and moles; state an appropriate control measure for EACH.</p> |

Understanding the production of outdoor vegetables and fruit

RHS reference number: R2113

Unit reference number: A/601/0264

Unit guided learning hours: 23

Unit Level: Level 2

Credit Value: 3

Unit purpose and aim(s): This unit will enable candidates to develop an understanding of the basic cultural operations and production methods necessary to obtain outdoor vegetable and fruit crops.

Learning Outcomes

The learner will:

1. Know the importance of site selection for outdoor food production in a garden or allotment
2. Understand the cultural operations used to produce outdoor food crops in a garden or allotment.

Assessment Criteria

The learner can:

- 1.1 State the factors to be considered when selecting a site: including soil depth, texture and structure, drainage, pH, aspect, slope, susceptibility to frost and wind, area of land available and availability of water.
- 1.2 Describe the reasons for providing shelter for an outdoor food production area, including the effects of wind reduction, frost potential and influences upon pollination.
- 1.3 State the benefits and limitations of living and non-living windbreaks.
- 1.4 Name FOUR plant species suitable for a living windbreak.
- 1.5 Name FOUR types of non-living permeable windbreak.
- 2.1 Describe a range of soil cultivation techniques suitable for the vegetable garden: including digging rotary cultivation, consolidation and tilth production.
- 2.2 Describe how the timing of soil cultivations will be influenced by soil texture, structure, weather and climate.
- 2.3 Describe what is meant by the bed system for growing vegetables. Compare this with open ground production.
- 2.4 Describe what is meant by a raised bed, giving a specification for a typical raised bed and paths.
- 2.5 Explain the no-dig system of managing raised beds.

- 2.6 State the methods used to advance and extend the productive season of outdoor food crops, including the use of polythene, mulches, fleece, 'enviromesh', low tunnels, cloches and cold frames.
- 2.7 Describe propagation methods used in the production of vegetable crops, including direct sowing and raising plants in seed beds, blocks and modules.
- 3. Understand the principles of vegetable crop production
 - 3.1 Describe the individual production of vegetable crops including runner beans, winter cabbage, Brussels sprouts, carrots, courgettes, onions, leeks, beetroot, potatoes and salad crops to include lettuce and radish.
 - 3.2 Describe how quality and yield may be determined by the following: base and top dressings, thinning, weed control, crop support, irrigation and pest and disease control.
 - 3.3 Describe how EACH of the vegetables in 3.1 may be harvested and stored successfully.
 - 3.4 State ONE common pest and ONE common disease of the vegetables named in 3.1, describing symptoms and control measures.
 - 3.5 State the benefits and limitations of crop rotation.
 - 3.6 Describe a four-bed system of crop rotation.
 - 3.7 Explain how successional cropping can be achieved for a NAMED crop by using sowing and planting dates, choice of cultivars and environmental protection.
 - 3.8 Explain how intercropping can be used to maximise production.
 - 3.9 Describe the effect of plant spacing on a named crop.
 - 3.10 Describe what is meant by 'cut and come again' vegetables.

4. Understand the production of top and soft fruit for a garden or allotment
- 4.1 Distinguish between top and soft fruit.
 - 4.2 List the types of top fruit (including apples, pears, plums and cherries) and factors for their selection, to include dessert and culinary cultivars; harvesting season; and storage capability.
 - 4.3 List the major types of soft fruit (strawberries, raspberries, blackcurrants, gooseberries, blueberries and grapes) and factors to be considered when choosing suitable cultivars, to include the fruit type; choice of early, mid and late season cultivars; flavour; and freezing capability.
 - 4.4 Describe the production of top fruit (apples and plums) and state the factors to be considered when choosing plants, including fruit type; plant quality; rootstock choice; size of tree; training style; pollination compatibility; and cultural requirements.
 - 4.5 Describe the production of soft fruit, including raspberries, blackcurrants and strawberries.
 - 4.6 State the advantages of purchasing certified stock.
 - 4.7 Describe how quality and yield can be determined by the following: planting; base and top dressings; mulching; weed control; irrigation; training systems; appropriate pruning; and pest and disease control.
 - 4.8 Describe the importance of formative and maintenance pruning for tree shape and yield.
 - 4.9 Explain the importance of cross pollination and fertilisation in top fruit, including flowering periods, compatibility, diploid and triploid cultivars.
 - 4.10 State four methods of ensuring effective pollination in fruit production.
 - 4.11 Describe the harvesting and storage of the fruit crops named in 4.4 and 4.5.
 - 4.12 State ONE common pest and ONE common disease of the fruits named in 4.4 and 4.5, describing symptoms and control measures.

Understanding protected environments and their use in plant cultivation

RHS reference number: R2114

Unit reference number: L/601/0267

Unit guided learning hours: 23

Unit Level: Level 2

Credit Value: 3

Unit purpose and aim(s): This unit will enable candidates to develop an understanding of the control of the environment in greenhouses, frames, polythene tunnels and cloches; the horticultural uses of protected environments; the production of a range of plants in greenhouses and tunnels; and the care of plants in the house and conservatory.

Learning Outcomes

The learner will:

1. Know a range of types of protected structure, and their use in growing plants.
2. Know the environment provided by a range of protected structures.
3. Know the structural and cladding materials used for a range of protected structures.

Assessment Criteria

The learner can:

- 1.1 Describe a range of protected structures, to include greenhouses, cold frames, polythene tunnels, cloches and conservatories.
- 1.2 Describe horticultural uses for each of the structures listed in 1.1, including plant propagation, crop production, and decorative display.
- 2.1 Describe the environmental differences between the protected environment and outdoors, including temperature; humidity; light; concentration of atmospheric gases; air movement; and irrigation requirements.
- 2.2 State the benefits and limitations of using protected structures for growing plants, (for example tomato, *Lycopersicon esculentum*) compared with growing the same plants outdoors.
- 2.3 Describe the effect of the environmental factors listed in 2.1 on plants in a protected environment.
- 3.1 List and describe the characteristics of a range of materials used for framework construction, including steel, aluminium, wood, and plastics. State the benefits and limitations of EACH.
- 3.2 Describe the properties of different cladding materials which can be used for structures, including glass; polyethylene film; polycarbonate; acrylic sheets; shade netting; and horticultural fleece. State the benefits and limitations of EACH.

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| <p>4. Understand the control of the environment in protected structures.</p> | <p>4.1 Describe the factors that affect light levels in protected structures, including shape of structure; site factors; orientation; type and condition of cladding materials.</p> <p>4.2 Describe how the temperature can be maintained in structures, including heating by gas, oil or electricity; heat distribution using circulating water and air; cooling by forced or natural ventilation; evaporation; and shading.</p> <p>4.3 Describe methods of changing the relative humidity (RH) in a protected environment, including the effects of 'damping down', ventilation and temperature changes.</p> <p>4.4 Describe manual and automated methods of irrigation, including the use of watering cans, hose pipes, capillary systems and 'drip' systems.</p> <p>4.5 Describe how light levels can be manipulated, by the use of supplementary lighting and shading, including blinds and shading paints.</p> <p>4.6 Describe the importance of cultural and biological controls to limit the damage caused by plant pests and diseases.</p> |
| <p>5 Know the types of container and growing media used for production and display in protected environments.</p> | <p>5.1 Compare the properties and characteristics of materials used in the manufacture of plant containers, including terracotta, plastic, polystyrene, peat, paper, natural and reconstituted stone, and recycled materials.</p> <p>5.2 Describe the factors that should be considered when choosing containers for the display of plants in greenhouses and interior displays, including management considerations and visual appeal.</p> |

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| <p>6. Understand the horticultural uses of the protected environment.</p> | <p>6.1 Describe the use of protected environments for the over-wintering, production and display of plants.</p> <p>6.2 Describe the production of a range of plants which can be grown in a protected environment in a garden situation under the following headings: propagation and establishment; maintenance; control of pests, diseases and disorders. Examples should include one decorative pot plant (<i>Cyclamen persicum</i>), one salad crop (<i>Lycopersicon esculentum</i>), one cut flower (<i>Chrysanthemum x morifolium</i>), one bedding plant (<i>Impatiens walleriana</i>) and one bulb for forcing (<i>Narcissus</i> 'Tete a Tete').</p> |
| <p>7. Understand the care of plants in an interior situation.</p> | <p>7.1 Describe the environmental factors that must be taken into account when displaying plants inside domestic buildings.</p> <p>7.2 Describe the choice of suitable containers and growing media for houseplants.</p> <p>7.2 Describe the management of one fern (<i>Adiantum raddianum</i>), one foliage (<i>Ficus benjamina</i>) and three seasonal flowering plants (<i>Euphorbia pulcherrima</i>, <i>Kalanchoe blossfeldiana</i>, and <i>Saintpaulia ionantha</i>) under the following headings: potting; feeding; watering; deadheading; re-potting; pest and disease identification and control.</p> |