

Level 2 Certificate of Technical Competence in Pruning (0145-20)

August 2017 Version 1.1

Qualification Handbook

Qualification at a glance

Industry area	Horticulture
City & Guilds number	0145-20
Age group	16-18, 19+
Entry requirements	Centres must ensure that any pre-requisites stated in the <i>What is this qualification about?</i> section are met.
Assessment	To gain this qualification, candidates must successfully achieve the following assessments: <ul style="list-style-type: none"> One to one practical assessment with oral questioning
Grading	Pass only
Approvals	Full centre approval Qualification approval
Support materials	If applicable
Registration and certification	Registration and certification of this qualification is through the Walled Garden, and is subject to end dates.

Title and level	Size (GLH)	TQT	City & Guilds qualification number	Ofqual accreditation number
Level 2 Certificate of Technical Competence in Pruning	10	12	0145-20	603/0789/4

Version and date	Change detail	Section
1.0	First version	
August 2017 Version 1.1	Added GLH and TQT Removed QCF	Qualification Structure Approval

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1 Introduction

Purpose of this qualification?

The following purpose is for the **City & Guilds Level 2 Certificate of Technical Competence in Pruning (603/0789/4)**

Area	Description
OVERVIEW	
Who is this qualification for?	<p>If you are looking for a career within the horticulture industry, then this qualification is aimed at you.</p> <p>This qualification covers the knowledge and skills required to prune a range of plants, shrubs or trees appropriately. You will understand when and how to prune for general health and maintenance and for specific effects.</p> <p>The qualification covers hand pruning of various types of plants, shrubs or trees using appropriate tools and techniques. No machinery is included; using chainsaws and hedge trimmers for pruning work is covered in other qualifications.</p> <p>You will understand safe working methods for pruning tasks, and how to avoid hazards identified during risk assessments. You will know how to make various pruning cuts and how to deal with arisings at the end of the process.</p> <p>The qualification can be taken in the context of:</p> <ul style="list-style-type: none">• Woody ornamental shrubs• Top and soft fruiting plants• Trees <p>You could also progress to further learning and training in this area.</p>

<p>What does this qualification cover?</p>	<p>This qualification covers the skills you will need to progress to work in the Horticultural industry. Mandatory content covers:</p> <ul style="list-style-type: none"> • Legislation affecting health and safety in pruning operations, including the use of risk assessments and safe working practices • Tools and Personal Protective Equipment (PPE) • Use hand tools to undertake pruning tasks • Clear arisings <p>The assessment for this qualification will require you to achieve:</p> <ul style="list-style-type: none"> • Practical tasks and oral questioning
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WHAT COULD THIS QUALIFICATION LEAD TO?

<p>Will the qualification lead to employment, and if so, in which job role and at what level?</p>	<p>Achievement of this qualification demonstrates that you have the practical skills and knowledge to progress into work, such as</p> <ul style="list-style-type: none"> • an Assistant gardener • an Assistant landscape operative • a Trainee horticulture operative
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<p>Why choose this qualification over similar qualifications?</p>	<p>There are no other recognised qualifications for pruning at this Level.</p>
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<p>Will the qualification lead to further learning?</p>	<p>Yes. Once you have successfully completed this qualification, you could go on to study other Level 2 or 3 College-based Horticulture qualifications over one or two years.</p> <p>Over one year:</p> <ul style="list-style-type: none"> • Level 2 Technical Certificate in Horticulture • Level 3 Advanced Technical Certificate in Horticulture • Level 3 Advanced Technical Diploma in Horticulture (540) <p>Over two years:</p> <ul style="list-style-type: none"> • Level 3 Advanced Technical Extended Diploma in Horticulture (720) • Level 3 Advanced Technical Extended Diploma in Horticulture (1080) (Professional Horticulture) <p>You could also progress to an Apprenticeship in a Horticultural occupation.</p>
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WHO SUPPORTS THIS QUALIFICATION?	
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Employer/Professional Trade Association	The Horticultural Trades Association.
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FURTHER INFORMATION	Please refer to the Qualification Handbook, available on the City & Guilds website, for more information on the structure of this qualification, the content of the units, and assessment.
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Qualification structure

For the **Level 2 Certificate of Technical Competence in Pruning** learners must be trained and assessed in a minimum of **one** of the units listed below. The qualification will be endorsed to the context of the unit assessed:

Unit number	Unit title	GLH
Learners must achieve a minimum of 1 unit from 201 - 203		
201	Pruning woody ornamental shrubs	10
202	Pruning soft and top fruit	10
203	Pruning trees	10

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	Size (GLH)	TQT
Level 2 Certificate of Technical Competence in Pruning	10	12

2 Centre requirements

Approval

New centres will need to gain centre approval. Existing centres who wish to offer this qualification must go through City & Guilds' **full** Qualification Approval Process. Please refer to the City & Guilds website for further information on the approval process: www.cityandguilds.com.

Centres that are approved to offer the relevant subject-related qualifications, new Technical qualifications or Work-based qualifications will receive **auto-approval** for these qualifications.

Please see the document on the webpage for 0145, under 'additional documents'.

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following requirements:

- be technically competent in the areas in which they are delivering
- be able to deliver across the breadth and depth of the content of the qualification being taught
- have recent relevant teaching and assessment experience in the specific area they will be teaching, or be working towards this
- demonstrate continuing CPD

Physical resources

Centres must be able to demonstrate that they have access to the equipment and technical resources required to deliver this qualification and its assessments. Centres must have access to a range of plant species.

Internal Quality Assurance

Internal Quality Assurance is key to ensuring accuracy and consistency of tutors and markers. Internal Quality Assurers (IQAs) monitor the work of all tutors involved with a qualification to ensure they are applying standards consistently throughout assessment activities. IQAs must have, and maintain, an appropriate level of technical competence and be qualified to make both marking and quality assurance decisions through a teaching qualification or recent, relevant experience.

Age restrictions

This qualification is approved for learners aged 16 – 19, 19+.

Employer involvement

Employer involvement is essential to maximise the value of each learner's experience. Centres are required to involve employers in the delivery of the Certificate of Technical Competence and/or their assessment, for every learner. This must be in place or planned before delivery programmes begin and available to the EQA for inspection and monitoring.

3 Administration

Approved centres must have effective quality assurance systems to ensure valid and reliable delivery and assessment of qualifications. Quality assurance includes initial centre registration by City & Guilds and the centre's own internal procedures for monitoring quality assurance procedures.

Consistent quality assurance requires City & Guilds and its associated centres to work together closely; our Quality Assurance Model encompasses both internal quality assurance (activities and processes undertaken within centres) and external quality assurance (activities and processes undertaken by City & Guilds).

For this qualification, standards and rigorous quality assurance are maintained by the use of:

- internal quality assurance

In order to carry out the quality assurance role, Internal Quality Assurers (IQAs) must have and maintain an appropriate level of technical competence and have recent relevant assessment experience. For more information on the requirements, refer to *Section 2: Centre requirements* in this handbook.

To meet the quality assurance criteria for this qualification, the centre must ensure that the following procedures are followed:

- suitable training of staff involved in the assessment of the qualification to ensure they understand the process of marking and standardisation
- completion by the person responsible for internal standardisation of the Centre Declaration Sheet to confirm that internal standardisation has taken place
- the completion by candidates and supervisors/tutors of the record form for each candidate's work

External quality assurance

City & Guilds will undertake external moderation activities to ensure that the quality assurance criteria for this qualification are being met. Centres must ensure that they co-operate with City & Guilds staff and representatives when undertaking these activities.

City & Guilds requires the Head of Centre to

- facilitate any inspection of the centre which is undertaken on behalf of City & Guilds
- make secure arrangements to receive, check and keep assessment material secure at all times, maintain the security of City & Guilds confidential material from receipt to the time when it is no longer confidential and keep completed assignment work and examination scripts secure from the time they are collected from the candidates to their dispatch to City & Guilds.

Malpractice

Please refer to the City & Guilds guidance notes *Managing cases of suspected malpractice in examinations and assessments*. This document sets out the procedures to be followed in identifying and reporting malpractice by candidates and/or centre staff and the actions which City & Guilds may subsequently take. The document includes examples of candidate and centre malpractice and

explains the responsibilities of centre staff to report actual or suspected malpractice. Centres can access this document on the City & Guilds website.

Examples of candidate malpractice are detailed below (please note that this is not an exhaustive list):

- falsification of assessment evidence or results documentation
- plagiarism of any nature
- collusion with others
- copying from another candidate (including the use of ICT to aid copying), or allowing work to be copied
- deliberate destruction of another's work
- false declaration of authenticity in relation to assessments
- impersonation.

These actions constitute malpractice, for which a penalty (eg disqualification from the assessment) will be applied.

Where suspected malpractice is identified by a centre after the candidate has signed the declaration of authentication, the Head of Centre must submit full details of the case to City & Guilds at the earliest opportunity. Please refer to the form in the document *Managing cases of suspected malpractice in examinations and assessments*. Alternatively please complete the form, JCQ/M1. Copies of this form can be found on the JCQ website: <http://www.jcq.org.uk>

Access arrangements and special consideration

We have taken note of the provisions of equalities legislation in developing and administering this specification.

We can make arrangements so that candidates with disabilities, special educational needs and temporary injuries can access the assessment. These arrangements must be made before assessment takes place.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the *JCQ access arrangements and reasonable adjustments and Access arrangements - when and how applications need to be made to City & Guilds* for more information. Both are available on the City & Guilds website: <http://www.cityandguilds.com/delivering-our-qualifications/centre-development/centre-document-library/policies-and-procedures/access-arrangements-reasonable-adjustments>

Special consideration

We can give special consideration to candidates who have had a temporary illness, injury or indisposition at the time of the examination. Where we do this, it is given after the examination.

Applications for either access arrangements or special consideration should be submitted to City & Guilds by the Examinations Officer at the centre. For more information please consult the current version of the JCQ document, *A guide to the special consideration process*.

Language of examinations

City & Guilds has a responsibility to ensure that candidates can be assessed in the following languages only:

- English
- English in Northern Ireland
- English in Wales.

4 Units

Level:	2
GLH:	10

What is this unit about?

The purpose of this unit is for learners to have the knowledge and skills to prune a range of woody ornamental plants appropriately. They will understand when and how to prune for general health and maintenance and for specific ornamental effects such as improved flowering, foliage or stem colour.

The unit covers hand pruning of various types of woody shrubs (e.g. roses, climbers, hedges). Tools used are secateurs, loppers and pruning saws. No machinery is included; using chainsaws and hedge trimmers for pruning work is covered in other qualifications.

Learners will understand safe working methods for pruning tasks, and how to avoid hazards identified during risk assessments. They will know how to make various pruning cuts and how to deal with arisings at the end of the process.

Learning outcomes

In this unit, learners will be able to:

1. Understand the relevance of legislation affecting health and safety in pruning operations
2. Select and use the appropriate tools and Personal Protective Equipment (PPE) for the tasks undertaken.
3. Use hand tools to prune woody plants at the appropriate time and using correct methods to maintain health and enhance ornamental qualities
4. Clear arisings to leave the site tidy, according to organisational requirements

Learning outcome:

- Understand the relevance of legislation affecting health and safety in pruning operations

Topics

- 1.1 Legislation which may affect pruning tasks
- 1.2 Practical application of a risk assessment to pruning tasks
- 1.3 Awareness of the hazards of working with certain plants
- 1.4 Safe working practices while performing pruning tasks

Topic 1.1

Legislation which may affect pruning activities on public and private sites:

For employees in particular:

- Health & Safety at Work Act (1974), every employee:
 - Must take care of their own health and safety and that of other people, who may be affected by what they do or don't do at work
 - Must cooperate with an employer or anyone else to ensure that all aspects of health and safety are complied with
 - Must not to interfere with or misuse or interfere with anything provided for health and safety
- Personal Protective Equipment Regulations (1992):
 - PPE must be supplied, and worn, this does not include general work wear
 - Employees/ self-employed persons must make proper use of the PPE that they have been provided with, as they have been trained or instructed
 - Employees/ self-employed persons are required to ensure that PPE is returned to the proper place after use
 - Employees must inform their employer if they lose their PPE or it is damaged or defective
- Manual Handling Operations Regulations (1992):
 - Employees should use safe lifting techniques where alternatives are not available
- Work at Height Regulations (2005):
 - Employers and contractors organising work at a height are obliged to use the safest means of working, and in many cases this means using a work platform rather than a ladder
 - The Regulations are designed to safeguard workers from falls and the public from dropped objects and accidents; they do not apply to private individuals but it is advisable for self-employed and lone workers to follow HSE guidance and only work from well-secured ladders, using platforms where possible
- Provision and Use of Work Equipment Regulations (1998) (PUWER)
 - Requires that all equipment is fit for purpose, properly maintained and appropriate training has been received in the use of equipment

And for everyone, employed, self-employed, volunteer or home owner:

- Wildlife and Countryside Act (1984), Habitat and Species Regulations (2010), Countryside Rights of Way Act (2000):
 - Operations must be carried out at times to minimise the impact on wildlife. The timing and type of work should avoid causing disturbance to any nesting or breeding birds or bat roosts that may be present within trees and hedgerows
 - It is an offence to intentionally kill, injure or uproot any listed wild animal or plant. The Act prohibits interference with places used for shelter or protection, or intentionally

disturbing animals occupying such places. Disturbing a bird's nest or a bat roost is a breach of the legislation

- All wild birds, their young, their eggs and active nests are protected under law. It is an offence to damage a nest intentionally while it is in use or being built and hedge cutting can damage nests or cause them to be deserted
- Bats (all species) and their resting place and roosts are strictly protected; deliberately capturing, disturbing, injuring and killing bats is prohibited and damaging or destroying their breeding sites, resting places and roosts is also prohibited
- Where bats are suspected to be present, a licenced bat specialist should be contacted and no work carried out without approval
- Anti-Social Behaviour Act 2003, revised 2005
 - 'High Hedges' refers to a line of two or more trees or shrubs, predominantly evergreen or semi-evergreen, more than 2 m tall
 - Where a Council upholds a complaint that such a hedge is a nuisance to a neighbour, it can order the hedge to be cut back at an appropriate season, but cannot compel work which would kill the hedge

Topic 1.2

Risk assessment for a specific site where woody ornamental shrubs are being pruned, and verbally feedback on their responsibility to implement measures to reduce risks (by wearing the Personal Protective Equipment (PPE) supplied and using tools sensibly).

Particular hazards which might be encountered while working on woody ornamental shrubs in public spaces such as parks, and how these risks could be reduced:

- Curious members of the public
 - Closing off the area where pruning work is taking place
 - Wearing high visibility clothing
- Hazardous litter:
 - Inspection of the work area before starting work
 - The use of Personal Protective Equipment (PPE)

Hazards that might be encountered when working with woody ornamental shrubs in private gardens and how these risks could be reduced:

- Fencing or walls in poor condition
 - Extra care should be taken not to rely on these for support while working
- Private gardens often do not observe public safety precautions
- Woody ornamental shrubs should be inspected for hazards like low voltage lighting cables, telecommunication cables

Hazards from wildlife which might be encountered during pruning work and the circumstances where pruning should be postponed or abandoned:

- Disturbing a wasps' nest
- Discovering a nesting bird
- Disturbing bat nests

Topic 1.3

Hazards of pruning particular types of plant, and how the risks of working with potentially injurious plants can be reduced:

- Puncture wounds from firethorn and other thorny shrubs.

- Skin and eye irritation from surface hairs of *Fremontodendron* (flannel bush), sap from rue
- Cherry laurel contains cyanide compounds; if waste is disposed of by burning, the smoke can cause headaches, and shredded leaves can also give off vapour in enclosed spaces.

Topic 1.4

Tools and equipment to be used safely and in accordance with industry best practice.

Good working practice in:

- Wearing and using appropriate Personal Protective Equipment (PPE) for the task
- Carrying a first aid kit or (if working in a team) knowing where to find a trained first aider
- Maintaining contact with backup if working alone

Tools for the types of pruning cut required:

- Secateurs
- Loppers
- Long arm pruner
- Pruning saw
- Pole saw
- Hand shears

Cleaning and disinfecting of tools between sites or plants, depending on specific conditions.

How tools should be kept safely when not in use:

- Secateurs closed and stored safely or holstered
- Pruning saw in a scabbard when not in use, or closed if a folding saw
- Shears closed and placed flat or point-down

Circumstances where the presence of members of the public could affect safe working practices, this could include setting up an exclusion area to:

- Prevent injury during pruning and the disposal of arisings
- Maintain security of tools

Safe disposal of arisings and in accordance with organisational requirements:

- Removal from the site
- Disposal in situ for mulching, composting or burning

Appropriate Personal Protective Equipment (PPE) for chipping or shredding arisings, and safety precautions when burning waste.

Learning outcome:

2. Understand the selection of appropriate Personal Protective Equipment (PPE), tools and equipment for pruning

Topics

- 2.1 Personal Protective Equipment for pruning tasks
- 2.2 Tools and equipment for pruning tasks

Topic 2.1

Personal Protective Equipment (PPE) to wear for pruning tasks:

- Gloves
- Protective footwear
- Safety glasses
- Helmet
- High visibility clothing

Topic 2.2

Tools and equipment for pruning tasks:

- Secateurs
 - For material up to pencil thickness
- Loppers
 - For material up to 2.5cm (or what fits comfortably in the jaws of the lopper)
- Long arm pruner
- Pruning saw
 - For material over this thickness
- Pole saw
 - For reaching higher branches without climbing
- Biocide and paper towel/cloth for application to blades
 - Blades disinfected between plants to prevent the spread of disease
- First aid kit

Learning outcome:

- 3. Use hand tools to prune woody plants at the appropriate time and using correct methods to maintain health and enhance ornamental qualities.

Topics

- 3.1 Principles and types of pruning
- 3.2 Pruning cuts
- 3.3 Pruning shrubs, climbers and trained forms of wall shrubs, roses and hedges

Topic 3.1

The principles of pruning woody ornamental shrubs:

- Removal of dead, damaged and diseased material (3Ds) before any other work is undertaken. (Order – diseased last, to avoid transmission of diseases by pruning tools when making more cuts. Disinfect if disease is present before working on another plant.)
- Removal of suckers below graft union or reverted material
- Identification and removal of crossing branches which have the potential to rub and allow ingress of diseases

The main types of pruning:

- Formative pruning
 - For a woody ornamental shrub, this would be pruning at planting and then during the early years of its growth, to establish a healthy branch or stem structure in the desired form
 - For a large-flowered rose will involve cutting stems hard back to an outward facing bud at planting, to promote new shoots growing away to give the desired open shape
 - Can also correct defects or weaknesses in the young shrub by directing growth to balance a lop-sided plant, or produce a single new leader as required
- Maintenance pruning
 - This is regular pruning to promote the formation of flower, fruit buds, to encourage large ornamental leaves, good stem or leaf colour on young wood
 - The style of pruning will differ with the subject
 - In most cases (apart from hard pruning like coppicing for stem colour/leaf size) a proportion of old stems will be removed close to the base of the shrub every year to encourage new growth for continuous regeneration
 - The overall size of the shrub can be kept under control
- Regenerative pruning
 - Where a shrub or climber has been neglected, regenerative pruning is aimed to bring it back to a manageable size and gradually get it back to flowering or fruiting properly
 - With many shrubs and climbers, it may be necessary to cut back hard to the base to encourage new growth, and this may lose a year of flowering, but the vigorous new growth can then be pruned according to 'maintenance' principles for its type and flowering period
 - This may take place over several years
- Coppicing
 - Is a specialist form of pruning suitable for vigorous shrubs where young stems, or large leaves, are required
 - Involves cutting right back to the base of the tree or shrub, removing all mature growth and so stimulating vigorous new shoots
- Pollarding
 - Is a similar technique to coppicing but the shrub is grown on a 'leg' of 1-2 metres
 - Shoots are cut back annually to produce young growth from the stumps
- Pleaching
 - Can be used to form a 'stilt hedge' where a clear stem of 2m is left before branches of the hedging shrub are trained horizontally to make a formal hedge, but at a height. Typical plant would be hornbeam
 - May also use similar techniques to pollarding, but only when a horizontal framework of branches has been established; once the horizontal branches are in place, all growth is cut back hard so that each year the branches are clothed in fresh foliage within the desired space. Typical plant would be lime
- Topiary
 - Involves pruning an evergreen shrub into a recognisable shape, whether it is geometric (pyramid, spiral, ball) or representative (peacocks, chessmen, railway engines and dragons)
 - Slower growing evergreens such as yew and box are suitable – faster growth tends to be looser and not hold the shape as effectively
 - Requires clipping regularly
- Cloud pruning
 - Is a Japanese method of producing a stylised 'clouds in sky' form from an established evergreen shrub or conifer

- By cutting some branches back to the clear stem, and leaving other branches clothed in foliage, an effect of spaced and tiered green 'clouds' is produced
- Cloud pruning also refers to evergreen hedges cut in a loose, curving style which follows the shape of each individual plant rather than a pre-determined line

Topic 3.2

The appropriate tools for making pruning cuts:

- Secateurs for material up to pencil thickness
- Loppers for material up to 3 cm (or what fits comfortably in the jaws of the lopper)
- Pruning saw for material over this thickness
- Pole saw or long arm pruner for reaching higher stems or branches
- Hedging shears for one-year-old growth only

How secateurs, loppers and pruning saws should be held correctly to achieve a clean cut:

- Correct position of a pruning cut using secateurs or loppers above a bud, with a sloping cut in the appropriate position
- Correct position for a cut using a pruning saw to remove an entire branch (back to the branch collar but not into it)

Topic 3.3

Prune shrubs:

- At the correct time of year for the plant and the specific effect required
- Wearing correct PPE for the situation
- Removing dead, damaged and diseased material
- Removing crossing and unwanted growth
- Positioning cuts correctly, just above the bud and angled away
- Making clean cuts without leaving torn or damaged bark
- Using the correct tools for the pruning cuts, according to the size of branch or shoot

The correct time of year to prune flowering shrubs:

- Shrubs that flower in the earlier part of the year flower on growth that has been produced during the previous season.

Stems which have flowered should be pruned back soon after flowers have faded, otherwise extension growth will occur from that point and the shrub will increase in size.

- Shrubs that flower later in the year flower on growth which has been made in the same year.

Large shrubs can be reduced in height in the autumn to avoid wind-rock but the main pruning is back to healthy buds in late winter or early spring.

The correct time of year and method of pruning to give the best stem colour on an ornamental shrub:

- In late winter or early spring, before the leaves emerge fully, cut back at least one third or all of the stems within two buds of the framework of older branches (coppicing)

The correct time of year and appropriate method of pruning to give the best foliage effect, at the expense of flowering:

- In late winter, cut back all of the stems close to the ground to within two buds of the framework (coppicing), or at the desired height (pollarding).

The difference between climbers and wall shrubs, and explain main pruning methods:

- Shrubs grown trained against a wall, like firethorn or silk tassel bush, are generally pruned after flowering. New growth is tied in and sideshoots cut back to within four buds of the permanent framework. Shoots growing towards the wall are removed.
- Vigorous climbers
- Wisteria is pruned twice: long shoots which develop after flowering are cut back in summer, then shortened again in late winter to stimulate flowering spurs.

The reasons for deadheading roses:

- Promoting further flowering
- Tidying the plant

The correct time for pruning roses is when dormant in winter or early spring.

The difference between cluster flowered (floribunda) and large flowered (hybrid tea) roses for pruning purposes:

- Large flowered roses produce large blooms through the summer; they are pruned hard to produce strong young shoots. Stems are cut down to approximately 20 cm above soil level, to an outward facing bud
- Cluster –flowered roses are grown for mass flower effect, not individual blooms. Stems are left longer for more buds, cut to an outward facing bud at approximately 30 cm or more above the ground

Differences between pruning methods for rambler roses and climbing roses:

- Climbing roses are generally repeat flowering roses. Prune any flowered side shoots back by two thirds of their length to an established framework, and cut out some of the old branches from the base to promote new growth
- Rambler roses usually flower once in early summer. Remove one third of the oldest stems, shorten side shoots by two thirds, prune out all stems after they have flowered and tie new ones in to take their place

The difference between formal and informal hedging and suitable plants for each:

- Formal - group of shrubs clipped precisely (yew, beech)
- Informal – loose group of shrubs allowed to flower and pruned lightly (fuchsia, lavender).

Appropriate time to prune hedges:

- Formal hedges, 1-3 times or as necessary during growing season
- Informal hedges, prune lightly after flowering.

The methods of achieving a straight line in trimming formal hedges, to include string lines and canes, boards and templates.

The reasons for vertical sided and 'battered' hedges:

- Vertical sided is appropriate for formal historic gardens
- The 'batter' is the taper which lets light and air to the base of the hedge.

Learning outcome:

4. Clear arisings to leave the site clear, according to organisational requirements.

Topic

4.1 Clear arisings and dispose of them according to organisational requirements.

Topic 4.1

Collection and disposal of arisings in line with the requirements of site safety and organisational policy:

- Collecting material for mechanical shredding on site, where shreddings will be used for composting or mulching on site. (Use of mechanical shredder is not covered in this qualification)
- Burning material (if permitted by local bye-laws, or required for biosecurity to prevent the spread of disease)
- Removing material off site for disposal

The site should be left clean and tidy after the task is completed.

Biosecurity and cross-contamination is a consideration with any pruning operation.

Guidance for delivery

This unit is designed to be delivered in the context of practical pruning operations, e.g. seasonal shrub pruning and hedge trimming with hand shears in public and private gardens. Background knowledge of legislation can be delivered in the classroom, then applied in practical situations to raise learners' awareness of legal obligations and health and safety issues.

Use of powered (hand held) hedge trimmers and shredders is covered in other qualifications.

Employer engagement

Employer engagement is essential in order to maximise the value of learners' experience. A partnership approach should be adopted where possible with employers with whom the consortium has links, and with employers used for work experience placements.

It would be helpful for teachers to develop a method of maintaining contact with a range of employers in the sectors who may be able to help with keeping the examples of legislation, policies and codes of practice used in the taught content, up to date.

Suggested learning resources

Journals and magazines

Horticulture Week
The Garden

Websites

The Health and Safety Executive (HSE) www.hse.gov.uk

Books

The Pruning of Trees, Shrubs and Conifers Published by Timber Press 2nd Edition edition 2009 ISBN: 1-604-69002-X	Brown,G. and Kirkham, T. (Ed)
RHS Pruning Plant by Plant Published by Dorling Kindersley 2012 ISBN: 1-405-39172-3	RHS
RHS Pruning and Training Published by Dorling Kindersley 2011 ISBN: 1-405-36312-6	Brickell, C. and Joyce, D.

Level:	2
GLH:	10

What is this unit about?

The purpose of this unit is for learners to have the knowledge and skills to prune a range of top and soft fruit appropriately. They will understand when and how to prune for general health and maintenance and to encourage regular fruiting.

The unit covers pruning of various types of fruit trees, bushes, canes and vines. Tools used are secateurs, loppers and pruning saws. No machinery is included; using chainsaws for pruning work is covered in other qualifications.

Learners will understand safe working methods for pruning tasks, and how to avoid hazards identified during risk assessments. They will know how to make various pruning cuts and how to deal with arisings at the end of the process.

Learning outcomes

In this unit, learners will be able to

1. Understand the relevance of legislation affecting health and safety in pruning operations
2. Select and use the appropriate tools and Personal Protective Equipment (PPE) for the tasks undertaken
3. Use hand tools to prune top and soft fruit at the appropriate time and using correct methods to maintain health and enhance ornamental qualities
4. Deal with arisings to leave the site clear, according to organisational requirements

Learning outcome:

1. Understand the relevance of legislation affecting health and safety in pruning operations, including the use of risk assessments and safe working practices.

Topic

- 1.1 Legislation which may affect pruning tasks
- 1.2 Practical application of a risk assessment to pruning tasks
- 1.3 Awareness of the hazards of working with certain plants
- 1.4 Safe working practices while performing pruning tasks

Topic 1.1

Legislation which may affect pruning activities on public and private sites:

For employees in particular:

- Health & Safety at Work Act (1974), every employee must:
 - Take care of their own health and safety and that of other people, who may be affected by what they do or don't do at work
 - Cooperate with an employer or anyone else to ensure that all aspects of health and safety are complied with
 - Not to interfere with or misuse or interfere with anything provided for health and safety
- Personal Protective Equipment Regulations (1992)
 - PPE must be supplied, and worn, this does not include general work wear
 - Employees self-employed persons must make proper use of the PPE that they have been provided with, as they have been trained or instructed
 - Employees/ self-employed persons are required to ensure that PPE is returned to the proper place after use
 - Employees must inform their employer if they lose their PPE or it is damaged or defective
- Manual Handling Operations Regulations (1992)
 - employees should use safe lifting techniques where alternatives are not available
- Work at Height Regulations (2005)
 - Employers and contractors organising work at a height are obliged to use the safest means of working, and in many cases this means using a work platform rather than a ladder
 - The Regulations are designed to safeguard workers from falls and the public from dropped objects and accidents
 - They do not apply to private individuals but it is advisable for self-employed and lone workers to follow HSE guidance and only work from well-secured ladders, using platforms where possible
- Provision and Use of Work Equipment Regulations (1998) (PUWER)
 - Requires that all equipment is fit for purpose, properly maintained and appropriate training has been received in the use of equipment

And for everyone, employed, self-employed, volunteer or home owner:

- Wildlife and Countryside Act (1984), Habitat and Species Regulations (2010), Countryside Rights of Way Act (2000)
 - Operations must be carried out at times to minimise the impact on wildlife
 - The timing and type of work should avoid causing disturbance to any nesting or breeding birds or bat roosts that may be present within trees and hedgerows

- It is an offence to intentionally kill, injure or uproot any listed wild animal or plant
- The Act prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. Disturbing a bird's nest or a bat roost is a breach of the legislation
- All wild birds, their young, their eggs and active nests are protected under law
- It is an offence to damage a nest intentionally while it is in use or being built and hedge cutting can damage nests or cause them to be deserted
- Bats (all species) and their resting place and roosts are strictly protected; deliberately capturing, disturbing, injuring and killing bats is prohibited and damaging or destroying their breeding sites, resting places and roosts is also prohibited
- Where bats are suspected to be present, a licenced bat specialist should be contacted and no work carried out without approval

Topic 1.2

Risk assessment for a specific site where fruit trees and bushes are being pruned, and personal responsibility to implement measures to reduce risks (by wearing the PPE supplied and using tools sensibly).

Hazards which might be encountered while working on fruit trees or bushes in spaces such as public gardens, and how these risks could be reduced:

- Curious members of the public
 - Closing off the area where pruning work is taking place
 - Wearing high visibility clothing
- Hazardous litter, e.g. glass, needles, dog faeces
 - Inspection of the work area before starting work
 - The use of personal protective equipment (PPE)

Hazards that might be encountered when working with top and soft fruit in private gardens and how these risks could be reduced:

- Fencing or walls in poor condition
 - Extra care should be taken not to rely on these for support while working
- Private gardens often do not observe public safety precautions
- Fruit trees should be inspected for hazards like low voltage lighting cables, telecommunication cables.

Hazards from wildlife which might be encountered during pruning work and circumstances where pruning should be postponed or abandoned:

- Disturbing a wasps' nest
- Discovering a nesting bird
- Disturbing bats nests

Topic 1.3

Hazards of pruning particular types of plant, and how the risks of working with potentially injurious plants can be reduced:

- Puncture wounds from quince, gooseberry or blackberry
- Skin and eye irritation from surface hairs of fig tree

Topic 1.4

Tools and equipment used safely and in accordance with industry best practice.

Good working practice in:

- Wearing and using appropriate Personal Protective Equipment (PPE) for the task
- Carrying a first aid kit or (if working in a team) knowing where to find a trained first aider
- Maintaining contact with backup if working alone

Tools for the types of pruning cut required:

- Secateurs
- Loppers
- Long arm pruner
- Pruning saw
- Pole saw

Methods for cleaning or disinfecting tools between sites or plants, depending on specific conditions.

Safe storage of tools when not in use:

- Secateurs closed and stored safely or holstered
- Pruning saw in a scabbard when not in use, or closed if a folding saw

Circumstances where the presence of members of the public could affect safe working practices. This could include setting up an exclusion area to:

- Prevent injury during pruning and the disposal of arisings
- Maintain security of tools

Safe disposal of arisings and in accordance with organisational requirements and current best practice:

- Removal from the site
- Disposal in situ for mulching, composting or burning

Personal Protective Equipment (PPE) for chipping or shredding arisings, and safety precautions when burning waste.

Learning outcome

2. Understand the selection of appropriate personal protective equipment (PPE), tools and equipment for pruning

Topics

- 2.1 Personal Protective Equipment for pruning tasks
- 2.2 Tools and equipment for pruning tasks

Topic 2.1 Personal Protective Equipment (PPE) to wear for pruning tasks:

- Gloves
- Protective footwear
- Safety glasses
- Helmet
- High visibility clothing

Topic 2.2 Tools and equipment for pruning tasks

Tools and equipment for pruning tasks:

- Secateurs
 - For material up to pencil thickness
- Loppers
 - For material up to 2.5 cm (or what fits comfortably in the jaws of the lopper)
- Long arm pruner
- Pruning saw
 - For material over this thickness
- Pole saw
 - For reaching higher branches without climbing
- Biocide and paper towel/cloth for application to blades
 - Blades disinfected between trees or shrubs to prevent the spread of disease
- First aid kit

Learning outcome

3. Use hand tools to prune top and soft fruit at the appropriate time and using correct methods to maintain health and enhance fruiting potential.

Topics

- 3.1 Principles and types of pruning
- 3.2 Pruning cuts
- 3.3 Pruning methods for top fruit types and forms (orchard and trained fruit)
- 3.4 Pruning methods for soft fruit types and forms (bush and trained fruits)

Topic 3.1

The principles of pruning a fruit tree or bush:

- Removal of dead, damaged and diseased material (3Ds) before any other work is undertaken. (Order – diseased last, to avoid transmission of diseases by pruning tools when making more cuts. Disinfect if disease is present before working on another plant)
- Removal of suckers from the rootstock of grafted trees or bushes
- Identification and removal of crossing branches which have the potential to rub and allow ingress of diseases

The main types of pruning:

- Formative pruning
 - For top and soft fruit, this would be pruning at planting and then during the early years of growth, to establish a healthy branch or stem structure in the desired form. For most productive trees and bushes this would be an open shape without crossing branches to allow light and air into the centre and promote ripening
 - For a gooseberry bush at planting it will involve identifying up to five main stems and pruning them back to 15-20 cm, removing all other stems from the base
 - For an apple tree (feathered maiden) is carried out over two years
 - For a dwarf bush form, the central stem is cut back to strong shoot with three or four well-spaced shoots below, and these are cut back by roughly half. Cuts should be just above an outward facing bud. In year two the growth on main branches is cut back by a third and side branches left intact unless they are crossing or growing into the centre. This forms an open framework
 - Can also correct defects or weaknesses in the young fruit tree by directing growth to balance a lop-sided plant, or produce a single new leader as required
- Maintenance pruning
 - This is regular, annual pruning to promote the formation of fruit buds
 - The type will depend on the fruit
 - Blackcurrants a proportion of old stems will be removed close to the base of the bush every year to encourage new growth for continuous regeneration
 - With apple trees, extension growth on main branches (leaders) is cut back by one third depending on vigour. Side branches (laterals) may be cut hard back to an outward facing bud in winter to promote fruiting on spurs, or vegetative growth can be removed in late July/August to maintain the tree's size and restrain vigour
 - Account should be taken of tip bearing and partial tip bearing trees as appropriate
- Regenerative pruning
 - Where a fruit tree has been neglected and has got out of hand, regenerative pruning is aimed to bring it back to a manageable size and gradually get it back to fruiting properly
 - This may require pruning techniques such as step cuts and reduction to remove large branches and open out the centre of the tree

Topic 3.2

Tools for making pruning cuts:

- Secateurs for material up to pencil thickness
- Loppers for material up to 2.5 cm (or what fits comfortably in the jaws of the lopper)
- Pruning saw for material over this thickness
- Pole saw or long arm pruner for reaching higher branches without climbing

Correct handling of loppers and secateurs to achieve a clean cut.

The correct position of a pruning cut using secateurs or loppers above a bud, with a sloping cut in the appropriate position.

The correct position for a cut using a pruning saw to remove an entire branch (back to the branch collar but not into it)

Topic 3.3

The correct time of year to prune tree forms of apples, pears and stone fruit (plums, cherries, peaches):

- Generally for established apple or pear bushes/trees most pruning takes place when the tree is dormant, as this is a good time of year to see the condition and shape of the tree. However some work can be carried out in summer if it is necessary to reduce the vigour of the tree. Pruning can also be carried out on trained tree forms in summer to allow light and air to reach the ripening fruit
- Stone fruit (plums, peaches, cherries) are not pruned in winter to avoid disease problems – during active growth is the correct time. Less pruning is required than for apples and pears

The correct time of year to prune a fig:

- Figs are pruned in early spring; hard pruning may be necessary to restrict the size of the bush or tree as figs are vigorous growers

The main free standing tree forms (bush, spindle, dwarf pyramid) grown in orchards or gardens.

The main trained or decorative forms of top fruit and which fruits these are commonly used for:

- Cordon (single or multiple stem, vertical or oblique) for apples and pears
- Espalier (horizontal tiers) for apples and pears
- Step-over (low single tier) for apples
- Fan for pear, cherry, peach, apricot, plum, fig and less often for apple

The differences between pruning a tip-bearing apple and a spur-bearing apple, and how to prune an apple when the growth habit is not obvious:

- Side growths on tip bearers are generally not shortened; on spur bearers this growth is shortened to promote fruiting spurs
- Where the fruiting habit is not known, side growths are not shortened

How to achieve an open-centred shape in a bush form by pruning and by spreading branches:

- Removing all inward-directed growth
- Using 'crotch spreaders' or wires to widen the angles between branches

Suitable methods of securing and training growth against a framework with string or soft ties and should state the importance of checking ties regularly.

Top fruit pruning:

- At the correct time of year for the specific fruit
- Wearing correct Personal Protective Equipment (PPE) for the situation
- Removing dead, damaged and diseased material
- Removing any suckers

- Removing crossing and unwanted growth (e.g. inward growth on a bush form)
- Pruning leaders and side shoots appropriately for the fruit and form
- Positioning cuts correctly, just above the bud and angled away
- Making clean cuts without leaving torn or damaged bark
- Thinning congested spurs if appropriate
- Using the correct tools for the pruning cuts, according to the size of branch or shoot
- Using the correct pruning cuts for any larger branches removed
- Tying-in replacement shoots where necessary for trained forms

Topic 3.4

The correct time of year to prune soft fruit bushes, canes and vines:

- Blackcurrant
 - Fruits most productively on one year; in winter, cut out all thin and weak shoots right to the base, allowing air and light into the bush. Thin by cutting out one in four of older branches
 - Pruning can also take place as fruit is picked, removing some complete fruited branches
 - Alternatively, alternate year pruning may also be carried out, in which all the growth is removed on every other plant in the row to just above ground level immediately after picking
- Red and white currant, gooseberry
 - These fruit on spurs require a permanent framework of branches, but can be trained effectively as fans or cordons (which are pruned in summer)
 - In winter, cut back tips of leader shoots and prune side shoots to one or two buds. Bush forms should be kept as open as possible. New extension growth can also be shortened to two buds in early summer to allow light to ripening fruit and make picking easier.
- Blueberry
 - Fruits on old growth
 - Little pruning is required other than removal of some old stems close to the ground to encourage new growth
- Raspberries
 - Summer fruiting raspberries fruit on one year old canes, which are cut out after fruiting and new growth tied in
 - Autumn fruiting raspberries are cut to the ground in January and fruit on the current season's growth
 - Require a post and wire framework to support them
- Blackberry and its hybrids (eg Loganberry, Tayberry)
 - Fruit on one-year old growth which is removed after fruiting and the current year's growth tied in to replace it
 - These fruits require a fence, or post and wire framework for support
 - Thin out weak canes
- Vines
 - Fruit on the current season's growth. Pruning depends on the system (Guyot, cordon, curtain or double forms) but should be carried out early in winter as the sap bleeds
 - Summer pruning is required to remove unwanted growth and facilitate ripening

The main trained or decorative forms of soft fruit, and which fruits these are commonly used for:

- Cordon (single or multiple stem, vertical or oblique) for red and white currants, gooseberries
- Espalier (horizontal tiers) for red and white currants
- Standard (grafted onto a 'leg') for gooseberries or red currants
- Fan for red and white currants, gooseberries.

How to achieve an open-centred shape in a bush form by pruning to remove all inward-directed growth and crossing branches.

Suitable methods of securing and training growth against a framework of posts and wires, using with string or soft ties.

Soft fruit pruning:

- At the correct time of year for the specific fruit
- Wearing correct Personal Protective Equipment (PPE) for the situation
- Removing dead, damaged and diseased material
- Removing crossing and unwanted growth (e.g. inward growth on a bush form)
- Pruning leaders and side shoots appropriately for the fruit and form
- Positioning cuts correctly, just above the bud and angled away
- Making clean cuts without leaving torn or damaged bark
- Thinning congested spurs if appropriate
- Using the correct tools for the pruning cuts, according to the size of branch or shoot
- Using the correct pruning cuts for any larger branches removed
- Tying-in replacement shoots where necessary for trained forms

Learning outcome:

4. Clear arisings to leave the site clear, according to organisational requirements.

Topic

- 4.1 Clear arisings (prunings) and dispose of them according to organisational requirements

Topic 4.1

Collection and disposal of arisings in line with the requirements of site safety and organisational policy:

- Collecting material for mechanical shredding on site, where shreddings will be used for composting or mulching on site. (Use of mechanical shredder is not covered in this qualification)
- Burning material (if permitted by local bye-laws, or required for biosecurity to prevent the spread of disease)
- Removing material off site for disposal

The site should be left clean and tidy after the task is completed.

Biosecurity and cross-contamination is a consideration with any pruning operation.

Guidance for delivery

This unit is designed to be delivered in the context of practical pruning operations, e.g. seasonal pruning of top and soft fruit in public and private gardens. Background knowledge of legislation can be delivered in the classroom, then applied in practical situations to raise learners' awareness of legal obligations and health and safety issues.

Use of powered (hand held) chainsaws and shredders are covered in separate qualifications.

Employer engagement

Employer engagement is essential in order to maximise the value of learners' experience. A partnership approach should be adopted where possible with employers with whom the consortium has links, and with employers used for work experience placements.

It would be helpful for teachers to develop a method of maintaining contact with a range of employers in the sectors who may be able to help with keeping the examples of legislation, policies and codes of practice used in the taught content, up to date.

Suggested learning resources

Journals and magazines

Horticulture Week

The Garden

Websites

The Health and Safety Executive (HSE) www.hse.gov.uk

Books

RHS Pruning Plant by Plant RHS
Royal Horticultural Society

Published by Dorling Kindersley 2012
ISBN: 1-405-39172-3

RHS Pruning and Training Brickell, C. and Joyce, D.
Published by Dorling Kindersley 2011

ISBN:1-405-36312-6

RHS Handbook: Pruning & Training
Royal Horticultural Society
Published by Mitchell Beazley 2013
ISBN: 1-845-33779-4

Level:	2
GLH:	10

What is this unit about?

The purpose of this unit is for learners to have the knowledge and skills to prune a range of trees appropriately. They will understand when and how to prune for general health and maintenance and for specific aesthetic effects such as improved shape, flowering.

The unit covers hand pruning of various types of trees. Tools used are secateurs, loppers and pruning saws. No machinery is included; using chainsaws and hedge trimmers for pruning work is covered in other qualifications.

Learners will understand safe working methods for pruning tasks, and how to avoid hazards identified during risk assessments. They will know how to make various pruning cuts and how to deal with arisings at the end of the process.

Learning outcomes

In this unit, learners will be able to:

1. Understand the relevance of legislation affecting health and safety in pruning operations
2. Select and use the appropriate tools and Personal Protective Equipment (PPE) for the tasks undertaken
3. Use hand tools to prune trees at the appropriate time and using correct methods to maintain health and enhance ornamental and aesthetic qualities
4. Clear arisings to leave the site clear, according to organisational requirements

Learning outcome:

1. Understand the relevance of legislation affecting health and safety in pruning operations, including the use of risk assessments and safe working practices.

Topics

- 1.1 Legislation and codes of practice which may affect pruning tasks
- 1.2 Practical application of a risk assessment to pruning tasks
- 1.3 Awareness of the hazards of working with certain plants
- 1.4 Safe working practices while performing pruning tasks

Topic 1.1

Legislation and codes of practice which may affect pruning activities on public and private sites:

For employees in particular:

- Health & Safety at Work Act (1974), every employee must
 - Take care of their own health and safety and that of other people, who may be affected by what they do or don't do at work
 - Cooperate with an employer or anyone else to ensure that all aspects of health and safety are complied with
 - Not to interfere with or misuse or interfere with anything provided for health and safety
- Personal Protective Equipment Regulations (1992)
 - PPE must be supplied, and worn, this does not include general work wear;
 - Employees/ self-employed persons must make proper use of the PPE that they have been provided with, as they have been trained or instructed
 - Employees/ self-employed persons are required to ensure that PPE is returned to the proper place after use
 - Employees must inform their employer if they lose their PPE or it is damaged or defective
- Manual Handling Operations Regulations (1992)
 - employees should use safe lifting techniques where alternatives are not available
- Work at Height Regulations (2005)
 - Employers and contractors organising work at a height are obliged to use the safest means of working, and in many cases this means using a work platform rather than a ladder
 - The Regulations are designed to safeguard workers from falls and the public from dropped objects and accidents; they do not apply to private individuals but it is advisable for self-employed and lone workers to follow HSE guidance and only work from well-secured ladders, using platforms where possible
- Provision and Use of Work Equipment Regulations (1998) (PUWER)
 - Requires that all equipment is fit for purpose, properly maintained and appropriate training has been received in the use of equipment

And for everyone, employed, self-employed, volunteer or home owner:

- Wildlife and Countryside Act (1984), Habitat and Species Regulations (2010), Countryside Rights of Way Act (2000)
 - Operations must be carried out at times to minimise the impact on wildlife
 - The timing and type of work should avoid causing disturbance to any nesting or breeding birds or bat roosts that may be present within trees and hedgerows

- It is an offence to intentionally kill, injure or uproot any listed wild animal or plant. The Act prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. Disturbing a bird's nest or a bat roost is a breach of the legislation
- All wild birds, their young, their eggs and active nests are protected under law. It is an offence to damage a nest intentionally while it is in use or being built and hedge cutting can damage nests or cause them to be deserted
- Bats (all species) and their resting place and roosts are strictly protected; deliberately capturing, disturbing, injuring and killing bats is prohibited and damaging or destroying their breeding sites, resting places and roosts is also prohibited
- Where bats are suspected to be present, a licenced bat specialist should be contacted and no work carried out without approval
- Town and Country Planning Act (2012)
 - Covers Tree Preservation Orders (TPOs) and conservation areas, any work to be undertaken on trees that are protected local authority guidance needs to be sought.
 - Permission to work on trees covered by TPOs will be needed
- Anti-Social Behaviour Act (2003) revised 2005
 - High hedges refers to a line of two or more trees or shrubs predominantly evergreen or semi-evergreen more than two metres tall
 - Where a local authority upholds a complaint that such a hedge is a nuisance to a neighbour it can order for the hedge to be cut back at an appropriate season, but cannot compel work that would kill the hedge
- British Standard BS3998 (2010) recommendations for undertaking tree work operations
 - The required standard for undertaking correct pruning of branches and stems

Topic 1.2

Risk assessment for a specific site where trees are being pruned, and personal responsibility to implement measures to reduce risks (by wearing the Personal Protective Equipment (PPE) supplied and using tools sensibly).

Hazards which might be encountered while working on trees in public spaces such as parks, and explain how these risks could be reduced:

- Curious members of the public
 - Closing off the area where pruning work is taking place
 - Wearing high visibility clothing
- Hazardous litter, e.g. glass, needles, dog faeces
 - Inspection of the work area before starting work
 - The use of Personal Protective Equipment (PPE)

Hazards that might be encountered when working with trees in private gardens and explain how these risks could be reduced:

- Fencing or walls in poor condition
 - Extra care should be taken not to rely on these for support while working
- Private gardens often do not observe public safety precautions
- Trees and evergreen hedges should be inspected for hazards like low voltage lighting cables, telecommunication cables

Hazards from wildlife which might be encountered during pruning work and circumstances where pruning should be postponed or abandoned:

- Disturbing a wasps' nest

- Attack by squirrel protecting its dray
- Discovering a colony of bats in the tree designated for work means that work should cease immediately

Topic 1.3

Hazards of pruning particular types of plant, and how the risks of working with potentially injurious plants can be reduced:

- Puncture wounds from blackthorn, false acacia and other thorny trees
- Skin irritation from Leyland cypress
- Skin and eye irritation from surface hairs of London plane
- Respiratory problems from tail attached to the seeds of poplars
- Cherry laurel contains cyanide compounds; if waste is disposed of by burning, the smoke can cause headaches, and shredded leaves can also give off vapour in enclosed spaces.

Topic 1.4

Tools and equipment safely and in accordance with industry best practice.

Good working practice in:

- Wearing and using appropriate Personal Protective Equipment (PPE) for the task
- Carrying a first aid kit or (if working in a team) knowing where to find a trained first aider
- Maintaining contact with backup if working alone

Tools for the types of pruning cut required:

- Secateurs
- Loppers
- Long arm pruner
- Pruning saw
- Pole saw
- Hand shears

Methods for cleaning or disinfecting tools between sites or plants, depending on specific conditions.

Safe storage of tools when not in use:

- Secateurs closed and stored safely or holstered
- Pruning saw in a scabbard when not in use, or closed if a folding saw
- Shears closed and placed flat or point-down

Circumstances where the presence of members of the public could affect safe working practices.

This could include setting up an exclusion area to:

- Prevent injury during pruning and the disposal of arisings
- Maintain security of tools

Safe disposal of arisings and in accordance with organisational requirements

- Removal from the site

- Disposal in situ for mulching, composting or burning

Personal Protective Equipment (PPE) for chipping or shredding arisings, and safety precautions when burning waste.

Biosecurity and cross-contamination is a consideration with any pruning operation.

Learning outcome

2. Understand the selection of appropriate Personal Protective Equipment (PPE), tools and equipment for pruning.

Topics

- 2.1 Personal Protective Equipment for pruning tasks
- 2.2 Tools and equipment for pruning tasks

Topic 2.1

Personal Protective Equipment (PPE) to wear for pruning tasks:

- Gloves
- Protective footwear
- Safety glasses
- Helmet
- High visibility clothing

Topic 2.2

Tools and equipment for pruning tasks:

- Secateurs
 - For material up to pencil thickness
- Loppers
 - For material up to 2.5 cm (or what fits comfortably in the jaws of the lopper)
- Long arm pruner
- Pruning saw
 - For material over this thickness
- Pole saw
 - For reaching higher branches without climbing
- Hand shears
 - For hedges
- Biocide and paper towel/cloth for application to blades
 - Blades disinfected between trees or shrubs to prevent the spread of disease
- First aid kit

Learning outcome:

3. Use hand tools to prune trees at the appropriate time and using correct methods to maintain health and enhance ornamental aesthetic qualities.

Topics

- 3.1 Principles and types of pruning
- 3.2 Types of pruning cuts
- 3.3 Pruning trees at the appropriate time
- 3.4 Understanding aerial pruning

Topic 3.1

Basic operations of pruning a tree:

- Removal of dead, damaged and diseased material (3Ds), also known as crown cleaning, before any other work is undertaken. (Order – diseased last, to avoid transmission of diseases by pruning tools when making more cuts. Disinfect if disease is present before working on another plant)
- Identification and removal of crossing branches which have the potential to rub and allow ingress of disease

The main types of pruning techniques:

- Formative pruning
 - For an ornamental tree, this would be pruning at planting and then during the early years of its growth, to establish a healthy branch or stem structure in the desired form. For most ornamental trees this would be an open shape without crossing branches to allow light and air into the centre of the tree
 - Pruning should be carried out in stages to ensure that sufficient leaf area is retained, and that any branches removed should be less than 20 mm in diameter (at the point of attachment)
 - Can also correct defects or weaknesses in the young trees by removing other stems which will become a problem as the tree grows
- Crown thinning
 - Is the removal of growth throughout the crown of a tree
 - The amount of leaf-bearing twig and branch structure removed should not exceed 30%. Material should be removed systematically from the outer as well as the inner crown generally avoiding cutting branches back to the main stem
 - It is usually undertaken to allow more light through the canopy of the tree
 - The amount of growth removed from the canopy should be evenly spread throughout the crown
 - Uneven or over thinning can increase the likelihood of branch failure and is not the most suitable method for reducing the overall loading effect on a branch
- Crown lifting
 - Involves the pruning of branches to achieve a specified vertical clearance above the ground or other surface
 - Extensive works should be phased over a number of years, secondary branch shortening is preferable to the removal of whole branches back to the main stem, as this may lead to ingress of disease
- Crown reduction and reshaping

- Is the overall reduction in size of the crown of a tree by reshaping and reducing the height and spread of one or more portions of the crown
- The extent of the reduction depends on the tree's ability to cope with the treatment, and the objectives of the landowner
- They should retain a strong framework of healthy smaller diameter branches and twigs capable of producing dense leaf cover during the following growing season
- Coppicing
 - Is a specialist form of pruning suitable for vigorous trees where young stems, or large leaves, are required
 - Involves cutting right back to the base of the tree or shrub, removing all mature growth and so stimulating vigorous new shoots
- Pollarding
 - Is a similar technique to coppicing in which the tree is grown on a 'leg' (traditionally 2 m to raise new shoots above grazing stock)
 - Shoots are cut back annually to produce young growth from the stumps
 - The technique is used to keep street trees to a manageable size, as well as for decorative purposes
- Pleaching
 - Can be used to form a 'stilt hedge' where a clear stem of 2 m is left before branches of the hedging shrub are trained horizontally to make a formal hedge, but at a height
 - Typical plant would be hornbeam
 - May also use similar techniques to pollarding, but only when a horizontal framework of branches has been established
 - Once the horizontal branches are in place, all growth is cut back hard so that each year the branches are clothed in fresh foliage within the desired space
 - Typical plant would be lime

Topic 3.2

Appropriate tools for making pruning cuts:

- Secateurs for material up to pencil thickness
- Loppers for material up to 3 cm (or what fits comfortably in the jaws of the lopper)
- Pruning saw for material over this thickness
- Pole saw and long arm pruners for reaching highest branches without climbing
- Hand shears for hedges

Correct holding position of loppers and secateurs to achieve a clean cut:

- Correct position of a cut on a tree with alternate buds
- Correct position of a cut on a tree with opposite buds

The 1-2-3 sequence of cuts, and the reasons it is used when pruning tree branches:

- Use the 1-2-3 sequence of cuts to control the cut section. The first two cuts are made far enough out (approximately 300 mm depending on diameter of the branch) to ensure the cut section doesn't hit the remaining section of the tree and close enough that the final cut doesn't tear or rip
- This may mean the 1-2 elements may be repeated several times on heavier branches and the final 1-2 being closer to the final cut than 300 mm
- The first cut is a third of the width through the branch and normally on the underside. On certain trees
- The second cut is generally away from the stem or parent branch by 25 mm, sometimes called an outboard step cut, and overlaps the first cut

- If the section needs to jump away from the stem and fall more horizontally, the second cut can be inboard or toward the stem or parent branch. This does increase the risk of tearing or ripping; species and time of year must be considered
- If this cannot be achieved, use two undercuts in a V formation; if an undercut cannot be achieved by the operator then undercut the entire diameter of the branch. This will involve carrying out an undercut at an angle and then from the other side of the branch make the second cut in line with the first cut. Once these cuts have been made, then the top cut is carried out as described above
- If none of the above can be achieved, then the branch will have to be reduced back in suitable small sections to ensure any tearing is minimised
- The final cut is an example of natural target pruning; where there is a distinct branch collar it is positioned to ensure it remains undamaged or if this is not visible, the pruning cut is a mirror image of the branch bark ridge. To shorten the length of a branch or stem, the final cut should be made distal to the union, or group of unions, back to one or more healthy laterals. The replacement branch(es) or stem(s) should be between a third and half the thickness of the branch being removed
- The reason for precise natural target pruning and reduction cuts is to work as closely as possible with the tree's natural defences. Natural target pruning preserves the branch bark collar and minimises the risk of the tree's defences being affected by pathogens. Reduction cuts minimise the surface area of pruning wounds while ensuring conditions for pathogen attack are reduced.

Different cuts that can be undertaken using the 1-2-3 technique:

- Step cuts hand held and free fall
- Sink cut hand held and free fall

When to use different types of cut:

- Step cuts to be used when removing small sections to reduce the weight of a branch to stop tearing
- Sink cuts are used to control the removal of larger branches

Topic 3.3

Tree pruning:

- At the correct time of year for the plant and the specific effect required
- Wearing correct Personal Protective Equipment (PPE) for the situation
- Removing dead, damaged and diseased material
- Removing crossing and unwanted growth
- Positioning cuts correctly
- Positioning of final target pruning cut above the branch collar
- Making clean cuts without leaving torn or damaged bark
- Using the correct tools for the pruning cuts, according to the size of branch or shoot

Reasons for pruning trees:

- Removal of damaged branches, to stop the spread of disease or pests from exposed bark
- Aesthetic reasons, to keep the shape and form, or to retain the tree at the same size, so it can be kept as the landowner desires.
- To ensure it maintains its natural shape and form
- To allow more light through to the understorey and so allow other plants to grow.

The correct time of year to prune trees:

- Pruning should be proportionate to the ability of the species to react defensively against wounding
- Certain trees (flowering cherry and other species with high susceptibility to silver leaf fungus) should be pruned only during active growth
- Trees with high sap levels (birch and maple) should not be pruned either when the sap is rising or falling, as it can cause ingress of disease or death through excessive bleeding
- Birch and other trees with weak decay defences should be pruned sparingly
- Softwoods can be pruned all year round, but when making the final cut it is best to do this from the underside of the branch bark collar. This will stop the resin and gums from bleeding out

Tree species and timber characteristics:

Common name	Botanical name	Growth rate	Brittle/ not	Produce re-growth
English Oak	<i>Quercus robur</i>	Slow	Not Brittle	Produces epicormic
European Beech	<i>Fagus sylvatica</i>	Slow	Not Brittle	Doesn't
Rowan	<i>Sorbus aucuparia</i>	Slow	Not Brittle	Produces epicormic
Common Ash	<i>Fraxinus excelsior</i>	Fast	Not Brittle	Produces epicormic
Silver Birch	<i>Betula pendula</i>	Fast	Brittle	Doesn't
Sycamore	<i>Acer pseudoplatanus</i>	Fast	Brittle	Produces epicormic
Common Lime	<i>Tilia x europaea</i>	Slow	Not Brittle	Produces epicormic
Hawthorn	<i>Crataegus monogyna</i>	Slow	Not Brittle	Produces epicormic
Wild Cherry	<i>Prunus avium</i>	Slow	Not Brittle	Produces epicormic
Crab Apple	<i>Malus sylvestris</i>	Slow	Not Brittle	Doesn't
Common Alder	<i>Alnus glutinosa</i>	Fast	Not Brittle	Produces epicormic
Horse Chestnut	<i>Aesculus hippocastanum</i>	Fast	Brittle	Produces epicormic
Sweet Chestnut	<i>Castanea sativa</i>	Fast	Not Brittle	Produces epicormic
Common Hazel	<i>Corylus avellana</i>	Fast	Not Brittle	Produces epicormic
Leyland Cypress	<i>x Cuprocyparis leylandii</i>	Fast	Not Brittle	Doesn't
Lawson Cypress	<i>Chamaecyparis lawsoniana</i>	Fast	Not Brittle	Doesn't
Scots Pine	<i>Pinus sylvestris</i>	Fast	Not Brittle	Doesn't

Norway Spruce	<i>Picea abies</i>	Fast	Not Brittle	Doesn't
Sitka Spruce	<i>Picea sitchensis</i>	Fast	Not Brittle	Doesn't
Douglas Fir	<i>Pseudotsuga menziesii</i>	Fast	Brittle	Doesn't
Crack Willow	<i>Salix fragilis</i>	Fast	Brittle	Produces epicormic
Goat Willow	<i>Salix caprea</i>	Fast	Brittle	Produces epicormic
Wych Elm	<i>Ulmus glabra</i>	Slow	Not Brittle	Produces epicormic
Common Elm	<i>Ulmus procera</i>	Slow	Not Brittle	Produces epicormic
Hornbeam	<i>Carpinus betulus</i>	Slow	Not Brittle	Doesn't
European Larch	<i>Larix decidua</i>	Fast	Brittle	Doesn't
Deodar Cedar	<i>Cedrus deodara</i>	Slow	Brittle	Doesn't
Norway Maple	<i>Acer platanoides</i>	Fast	Brittle	Produces epicormic

Topic 3.4

This topic is knowledge only and there is no practical element to this topic, this is covered in other qualifications.

Situations where aerial pruning is required:

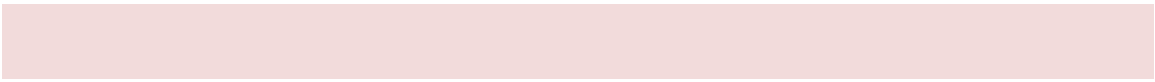
- Removal of large limbs which are dangerous or pose a potential hazard
- Reducing large mature trees
- Re-establish lapsed pollards
- Pruning for utilities, removal of branches to allow telecommunication and power lines to pass through
- Removal of damaged branches and diseased wood
- Reducing branches that are interfering with other structures or trees

Ways to access the crown of the tree:

- To understand the hierarchy of methods of access when assessing a tree for aerial pruning
- Use of a mobile elevated work platform (MEWP), under the Working at Height Regulations
- Use of a ladder
- Use of a trained arborist who can access the tree to undertake the required pruning operations

Hazards and risks with carrying out aerial pruning:

- Falls from height
- Branches failing whilst pruning in the tree
- Weather
- Wildlife issues



Learning outcome:

4. Clear arisings and leave the site clear, according to organisational requirements.

Topic

4.1 Clear arisings and dispose of them according to organisational requirements

Topic 4.1

Collection and disposal of arisings in line with the requirements of site safety and organisational policy:

- Collecting material for mechanical shredding on site, where shreddings will be used for composting or mulching on site. (Use of mechanical shredder is not covered in this qualification)
- Burning material (if permitted by local bye-laws, or required for biosecurity to prevent the spread of disease)
- Removing material off site for disposal

The site should be left clean and tidy after the task is completed.

Guidance for delivery

This unit is designed to be delivered in the context of practical pruning operations, e.g. seasonal tree shrub pruning in public and private gardens. Background knowledge of legislation can be delivered in the classroom, then applied in practical situations to raise learners' awareness of legal obligations and health and safety issues.

Use of aerial pruning is covered in a separate qualification.

Employer engagement

Employer engagement is essential in order to maximise the value of learners' experience. A partnership approach should be adopted where possible with employers with whom the consortium has links, and with employers used for work experience placements.

It would be helpful for teachers to develop a method of maintaining contact with a range of employers in the sectors who may be able to help with keeping the examples of legislation, policies and codes of practice used in the taught content, up to date.

Suggested learning resources

Journals and magazines

BS3998:2010 British Standard for tree work
Arb Association quarterly magazine

www.trees.org

Websites

The Health and Safety Executive (HSE)

www.hse.gov.uk

Books

The Pruning of Trees, Shrubs and Conifers
Published by Timber Press 2nd Edition edition
2009
ISBN: 1-604-69002-X

Brown, G. and Kirkham, T. (Ed)

RHS Pruning Plant by Plant

Published by Dorling Kindersley 2012

ISBN: 1-405-39172-3

RHS Pruning and Training

Published by Dorling Kindersley 2011

ISBN: 1-405-36312-6

Brickell, C. and Joyce, D.

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on www.cityandguilds.com.

City & Guilds Centre Manual

This document provides guidance for organisations wishing to become City & Guilds approved centres, as well as information for approved centres delivering City & Guilds qualifications. It covers the centre and qualification approval process as well as providing guidance on delivery, assessment and quality assurance for approved centres.

It also details the City & Guilds requirements for ongoing centre and qualification approval, and provides examples of best practice for centres. Specifically, the document includes sections on:

- the centre and qualification approval process
- assessment, internal quality assurance and examination roles at the centre
- registration and certification of candidates
- non-compliance and malpractice
- complaints and appeals
- equal opportunities
- data protection
- management systems
- maintaining records
- internal quality assurance
- external quality assurance.

Our Quality Assurance Requirements

This document explains the requirements for the delivery, assessment and awarding of our qualifications. All centres working with City & Guilds must adopt and implement these requirements across all of their qualification provision. Specifically, this document:

- specifies the quality assurance and control requirements that apply to all centres
- sets out the basis for securing high standards, for all our qualifications and/or assessments
- details the impact on centres of non-compliance

Our Quality Assurance Requirements document encompasses the relevant regulatory requirements of the following documents, which apply to all UK centres working with City & Guilds:

- Ofqual's General Conditions of Recognition

The centre homepage section of the City & Guilds website also contains useful information on

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for e-assessments.

Useful contacts

UK learners General qualification information	E: learnersupport@cityandguilds.com
International learners General qualification information	E: intcg@cityandguilds.com
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	E: information@cityandguilds.com
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	E: singlesubjects@cityandguilds.com
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	E: intops@cityandguilds.com
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	E: walledgarden@cityandguilds.com
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: business@cityandguilds.com

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About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group operates from three major hubs: London (servicing Europe, the Caribbean and Americas), Johannesburg (servicing Africa), and Singapore (servicing Asia, Australia and New Zealand). The Group also includes the Institute of Leadership & Management (management and leadership qualifications), City & Guilds Licence to Practice (land-based qualifications) and Learning Assistant (an online e-portfolio).

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