



City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (PA3) (0216-75)

Version 1.0 (December 2025)

Qualification Handbook

Candidates are **not** permitted to refer to this document during the practical observation and oral questioning.

Qualification at a glance

Subject area	Pesticides and Pest Control
City & Guilds number	0216-75
Age group approved	16+
Entry requirements	Learners must have achieved the Principles of Safe Handling and Application of Pesticides (PA1) (or equivalent) before being assessed for this qualification
Assessment	<p>This is an independently assessed qualification.</p> <p>To gain this qualification, candidates must successfully achieve the following:</p> <ul style="list-style-type: none"> one to one practical observation with oral questioning
Grading	Pass/Fail
Approvals	Full approval required
Support materials	<p>Qualification handbook</p> <p>Practical assessment guidance (available via the Assessor secure area of www.nptc.org.uk)</p>
Registration and certification	Consult Walled Garden for last dates

Title and level	City & Guilds qualification number	Regulatory reference number	GLH	TQT
City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (PA3)	0216-75	610/6549/3	54	60

Version and date	Change detail	Section
1.0 December 2025	Initial version	All

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1 Introduction

This document tells you what you need to do to deliver the qualification.

Area	Description
Who is the qualification for?	<p>The term “pesticides” is defined as any substance, preparation or organism that is prepared for or used to control any pest. The term “pesticide” is used to cover pesticides and Plant Protection Products (PPPs).</p> <p>This qualification is for those individuals whose job involves applying professional pesticide products. It is a legal requirement under the Plant Protection Products (Sustainable Use) Regulations (2012) to hold an approved qualification.</p> <p>This qualification is designed specifically for those who wish to apply pesticides using variable geometry boom or broadcast sprayers.</p> <p>NB: this qualification does not apply to contour following boom sprayers; these applicators fall under PA2.</p>
What does the qualification cover?	<p>This qualification covers:</p> <ul style="list-style-type: none">• understanding the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use• reading and interpreting a product label• assessing the environmental risks relating to the filling and application site• preparing and calibrating the applicator• operating the applicator• knowing how to carry out post-operational procedures
What opportunities for progression are there?	<p>This qualification will support progression into/sustainment in employment where applying pesticides using variable geometry boom or broadcast sprayers is part of the role. This qualification will also support progression into further learning in pesticides and pest control.</p> <p>Recommended progression onto 0216-87 City & Guilds Level 3 Award in Responsible Pesticide Management (RA-RPM) is also available.</p> <p>City & Guilds offer a range of refreshers in pesticides and pest control. Under the Provision and Use of Work Equipment Regulations (PUWER) it is</p>

recommended that individuals have a refresher every 2–5 years.

Each refresher covers the appropriate practical skills required to meet legislation, industry technical standards and industry good practice.

The refresher encourages looking forward and identifying opportunities to learn something new, refresh existing knowledge, improve skills, and keep up to date with the latest developments in a profession or industry.

Who did we develop the qualification with?

Developed with City & Guilds NPTC stakeholders, associates and industry representatives.

Compliance with the requirements of the Health and Safety Executive, Chemical Regulation Division, Voluntary Initiative, Department for Environment, Food and Rural Affairs (DEFRA), and the relevant Environmental Agency.

Is it part of an apprenticeship framework or initiative?

No

Structure

To achieve the City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (broadcast sprayer with air assistance) (PA3A) (0216-75), learners must achieve:

City & Guilds unit number	Unit title	GLH
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Mandatory unit:

Learners **must** achieve the following mandatory unit.

Unit 238	Operating a broadcast sprayer with air assistance (PA3A)	54
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To achieve the City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (variable geometry sprayer with air assistance) (PA3B) (0216-75), learners must achieve:

City & Guilds unit number	Unit title	GLH
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Mandatory unit:

Learners **must** achieve the following mandatory unit.

Unit 239	Operating a variable geometry sprayer with air assistance (PA3B)	54
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To achieve the City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (variable geometry sprayer without air assistance) (PA3C) (0216-75), learners must achieve:

City & Guilds unit number	Unit title	GLH
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Mandatory unit:

Learners **must** achieve the following mandatory unit.

Unit 240	Operating a variable geometry sprayer without air assistance (PA3C)	54
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Total Qualification Time (TQT)

TQT is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT consists of the following two elements:

- the number of hours that an awarding organisation has assigned to a qualification for guided learning
- an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by – but, unlike guided learning, not under the immediate guidance or supervision of – a lecturer, supervisor, tutor or other appropriate provider of education or training.

Title and level	GLH	TQT
City & Guilds Level 2 Award in the Safe Application of Pesticides Using Variable Geometry Boom or Broadcast Sprayers (PA3)	54	60

2 Centre requirements

Approval

Full approval

To offer this qualification, centres will need to gain both centre and qualification approval. Please refer to the document [**Centre Approval Process: Quality Assurance Standards**](#) for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Centres

The learner must be registered through the City & Guilds approved Assessment Centre for this qualification **prior** to the assessment.

Centre Staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They must have:

Technical competence

- be occupationally competent or possess technical expertise equivalent to the level of training being delivered.
- experience should reflect current industry standards and practice.

Professional experience

- must have current and relevant experience in the specific subject area being delivered and assessed.

Training delivery

- proven track record of delivering training.

Assessors

Assessors must be approved Certificate of Competence (CoC) City & Guilds NPTC Assessors and **must be independent and cannot have been involved with the training of the candidate.**

Assessors must use the practical assessment guidance which is available via the assessor secure area of www.nptc.org.uk.

Assessors must:

- show competence and provide evidence of industry expertise in the qualification(s) they wish to assess
- hold the qualification as a candidate and have been technically evaluated as an assessor
- be up to date with their verification and relevant first aid training.

Demonstrating continuing technically relevant Continuing Professional Development (CPD) with these requirements is a pre-requisite for assessors to remain on the list of approved assessors.

Continuing Professional Development (CPD)

Centres are expected to support their staff in ensuring that their knowledge of the occupational area remains current and of best practice in delivery, mentoring, training, assessment and quality assurance, and that it takes account of any national or legislative developments.

Physical resources

Centres must be able to demonstrate that they have access to the physical resources required to deliver this qualification and its assessments:

Site requirements:

- a dry location for questioning and documentation completion
- a suitable area for calibration of the applicator
- a site for calculating and measuring pesticide and water and adding to the applicator
- a specified area for application

Equipment/Machinery:

Any equipment/machinery used for the delivery or assessment must comply with current legal requirements.

- applicator: variable geometry or broadcast sprayer
- Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE)
- measuring tape and/or wheel
- stopwatch
- compass and anemometer
- measuring jug(s)
- calculator
- bout markers/Global Positioning System (GPS)
- drip tray
- spillage kit

Documentation:

- product label and/or appropriate EAMU provided by the candidate
- calibration aids
- application record provided by the candidate
- manufacturer's operator's handbook/literature
- nozzle chart(s)

Consumables:

- first aid kit
- water supply
- simulated pesticide product or actual product may be used if required

Additional information:

Additional information may be sought from the relevant manufacturer's operator's manual, product information or database, nozzle chart(s) or any other publication by the government or a government agency.

Quality assurance

Approved centres must have effective quality assurance systems to ensure optimal delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City & Guilds quality assurance processes visit the [What is CASS?](#) and [Quality Assurance Standards](#) documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- internal quality assurance
- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers (IQAs) must:

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification
- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds. External Quality Assurers (EQAs) are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

Learner entry requirements

Learners must have achieved the Principles of Safe Handling and Application of Pesticides (PA1) (or equivalent) before being assessed for this qualification.

Centres must ensure that learners have the potential and opportunity to gain the qualification successfully.

Age restrictions

This qualification is approved for learners aged 16 or above.

Access arrangements, reasonable adjustments and special consideration

City & Guilds has considered the design of this qualification and its assessments in order to best support accessibility and inclusion for all learners. City & Guilds understands however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment.

Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

The Equality Act 2010 requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

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.

Special consideration is a post examination adjustment to a candidate's mark or grade to reflect temporary injury, illness or other indisposition at the time of the examination/assessment.

Please refer to the documents 'Joint Council for Qualifications (JCQ) Access Arrangements and Reasonable Adjustments', 'JCQ – A Guide to the special consideration process' and 'Access arrangements – When and how applications need to be made to City & Guilds' for more information. All of these are available on the [**City & Guilds website**](#)

3 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs
- any support and guidance they may need when working towards their qualification
- any units they have already completed or credit they have accumulated which is relevant to the qualification
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme, so the learner fully understands the requirements of the qualification, their responsibilities as a learner and the responsibilities of the centre. This information can be recorded on a learning contract.

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth. More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here: [Inclusion and diversity | City & Guilds \(cityandguilds.com\)](#)

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that help our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here: [Our Pathway to Net Zero | City & Guilds \(cityandguilds.com\)](#)

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy and considering and investing in the use of resources that can be reused, instead of the use of disposable or single use consumables)
- waste procedures (ensuring that waste is minimised and recycling is in place wherever possible)
- minimising water use and considering options for reuse/salvage wherever possible.

Support materials

The following resources are available for this qualification:

Description	How to access
Qualification handbook	<u>www.nptc.org.uk</u>
Practical assessment guidance	Available only via the assessor secure area

4 Assessment

Assessment of the qualification

Candidates must successfully complete:

- one practical observation with oral questioning for each registered unit

Unit	Title	Assessment method	Where to obtain assessment materials
Unit 238	Operating a broadcast sprayer with air assistance (PA3A)	Practical observation with oral questioning Externally set, assessed by a City & Guilds NPTC approved assessor, externally verified	Assessors must use the materials provided by City & Guilds. Practical assessment guidance can be downloaded from the assessor secure area of www.nptc.org.uk
Unit 239	Operating a variable geometry sprayer with air assistance (PA3B)	Practical observation with oral questioning Externally set, assessed by a City & Guilds NPTC approved assessor, externally verified	Assessors must use the materials provided by City & Guilds. Practical assessment guidance can be downloaded from the assessor secure area of www.nptc.org.uk
Unit 240	Operating a variable geometry sprayer without air assistance (PA3C)	Practical observation with oral questioning Externally set, assessed by a City & Guilds NPTC approved assessor, externally verified	Assessors must use the materials provided by City & Guilds. Practical assessment guidance can be downloaded from the assessor secure area of www.nptc.org.uk

Assessment strategy

City & Guilds has written the following assessments to use with this qualification:

- live practical assessment guidance (practical observation with oral questioning) that can be downloaded from the assessor secure area of the NPTC website.

During the assessment the candidate may refer to operator manuals, training materials or safety publications, but they may **not** refer to the Qualification Handbook (QHB).

Time constraints

The following **must** be applied to the assessment of this qualification:

- candidates must complete their assessment within 12 months of initial registration.
- practical observation and oral questioning should take between 1.5–3 hours.

Summary of responsibilities in preparing for the assessment process

Centre responsibilities	Candidate responsibilities	Assessor responsibilities
A suitable site is made available for the assessment to take place		Ensuring that the site provided is suitable for the assessment to take place
Machinery and/or equipment and materials are available to enable assessment of all the activities to take place	To be familiar with the machinery and/or equipment being used for the assessment	Ensuring that the machinery and/or equipment and materials provided satisfy the assessment requirements
	To bring appropriate Personal Protective Equipment (PPE) and/or Respiratory Protective Equipment (RPE) to the assessment	Wearing appropriate PPE and/or RPE. Ensuring that candidate's PPE and/or RPE complies with the requirements of the assessment
	To bring relevant training materials (if applicable)	
	To bring a product label and application record appropriate for the assessment	To ensure that the product label and application record is appropriate for the assessment (or provide a suitable alternative)

5 Units

Structure of the units

These units each have the following:

- City & Guilds reference number
- title
- level
- Guided Learning Hours (GLH)
- assessment method
- unit aim
- Learning Outcomes (LOs), which are comprised of a number of Assessment Criteria (ACs)
- supporting information

Guidance for delivery of the units

This qualification comprises of a number of **units**. A unit describes what is expected of a competent person in particular aspects of their job.

Each unit is divided into **Learning Outcomes (LOs)** which describe in further detail the skills and knowledge that an individual should possess.

Each Learning Outcome (LO) has a set of **Assessment Criteria (ACs)** (performance and knowledge and understanding) which specify the desired criteria that must be satisfied before an individual can be said to have performed to the agreed standard.

Supporting information provides guidance of the evidence requirement for the units, specific guidance on safe practice, and suggested learning resources. Centres are advised to review this information carefully before delivering the unit.

Unit 238 Operating a broadcast sprayer with air assistance (PA3A)

Level:	2
GLH:	54
Assessment method:	Practical observation with oral questioning
Aim:	The purpose of this unit is for learners to safely operate a broadcast sprayer with air assistance.

Learning Outcomes

- LO1 Understand the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use
- LO2 Read and interpret information on a product label
- LO3 Assess the environmental risks relating to the filling and application site
- LO4 Prepare and calibrate the applicator
- LO5 Operate the applicator
- LO6 Know how to carry out post-operational procedures

Assessment Criteria	Scope of study
AC1.1 Describe the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use	<p>Assessment Criteria 1.1</p> <p>Legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use:</p> <ul style="list-style-type: none">a) Operator's responsibility under legislation:<ul style="list-style-type: none">i) Follow product label requirements for correct application of pesticides.ii) Follow employer instructions and training for applicator use.iii) Use Integrated Pest Management (IPM) techniques where possible.iv) Protect flora and fauna from harm when carrying out work.v) Ensure public access on foot to area of land is not prohibited/restricted during work unless permission is granted.vi) Do not apply pesticides to public rights of way unless specifically for managing access.b) Operator's responsibility under regulations:<ul style="list-style-type: none">i) Follow obligations on the use and disposal of Plant Protection Products (PPPs), including packaging.ii) Read, understand and comply with Control of Substances Hazardous to Health (COSHH)/risk assessments and adhere to the control measures put in place.iii) Use, maintain and store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) as provided and instructed.

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> iv) Follow instructions and training in the inspection, use, calibration and maintenance of applicators. v) Follow compliance requirements for the management and disposal of waste. vi) Be prepared for inspection of PPPs record keeping and storage. vii) Know the company policy on how to report Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) to the HSE (Health and Safety Executive). c) Operator's responsibility under Pesticide Code of Practice (CoP) for using Plant Protection Products (PPPs): <ul style="list-style-type: none"> i) Hold (or be under supervision of a holder of) a specified certificate directly related to the application method and/or applicator being used (Certificates of Competence (CoC)). ii) Apply pesticides safely and effectively following product information and complying with current legislation. d) Work in accordance with the UK Pesticides National Action Plan (NAP): <ul style="list-style-type: none"> i) Use IPM and alternative approaches or techniques where possible. ii) Reduce impact by applying pesticides at appropriate times, safely monitor and contain active substances which are particularly harmful. iii) Ensure storage, handling and disposal operations do not endanger human health or the environment, comply with inspections, enforcement and other official control activities.
AC1.2 State the requirements for protecting the operator from contamination and physical harm following industry best practice	<p>Assessment Criteria 1.2</p> <p>Requirements for protecting the operator from contamination and physical harm following industry best practice:</p> <ul style="list-style-type: none"> a) Vehicle features that protect the operator from pesticide contamination: <ul style="list-style-type: none"> i) Sealed cab: <ul style="list-style-type: none"> • carbon filter fitted. • use of in-cab controls. • functional ventilation system. • closed windows. • an external locker to store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE). • pressurised pesticide components sited outside the cab. ii) Open cab/canopy/platform: <ul style="list-style-type: none"> • requirement to always wear appropriate PPE/RPE. • isolation from pressurised pesticide components. b) Safety considerations when driving on a public highway: <ul style="list-style-type: none"> i) Hold the correct category of license. ii) Comply with operator age requirements. iii) Adhere to road/vehicle speed limits. iv) Comply with the highway code. v) Independent brakes coupled together/locked. vi) Instability of vehicle at high speeds. vii) Observe loading capacities on All-Terrain Vehicles (ATVs) c) Safe driving on uneven/sloping terrain: <ul style="list-style-type: none"> i) Assess ground conditions and slope. ii) Select four-wheel drive (if fitted). iii) Appropriate speed for the terrain. iv) Correct gear selected for terrain to avoid changing gear on slope. v) Effect of changing load on stability. vi) Use of counterbalance weights for stability. vii) Correct turning procedure. viii) Keep centre of gravity as low as possible.
AC2.1 Read and interpret information on a product label	<p>Assessment Criteria 2.1</p> <p>Information on a product label:</p>

Assessment Criteria	Scope of study
AC3.1 Identify environmental risks to the filling and application site and explain how to minimise these risks	<p>Assessment Criteria 3.1</p> <p>Environmental risks to the filling and application site and how to minimise these risks:</p> <p>a) Environmental factors at risk at the filling and application site:</p> <ul style="list-style-type: none"> i) Ground conditions. ii) Water courses. iii) Drains. iv) Boreholes. v) Environmental margins/strips/areas. vi) Wildlife. vii) Beneficial insects. viii) Non-target plants. ix) Sensitive crops/areas. x) Hedgerows. xi) Housing. xii) Public access. xiii) Other environmental factors relevant to the site. <p>b) Minimise risks to the filling and application site:</p> <ul style="list-style-type: none"> i) Check and maintain application rate. ii) Monitor weather conditions. iii) Avoid spray drift. iv) Avoid off target application. v) Avoid surface run-off. vi) Observe buffer zones or alter in line with current schemes. vii) Observe environmental margins/strips/areas. viii) Inform neighbours.

Assessment Criteria	Scope of study
AC4.1 Identify applicator components, controls and types of nozzles	<p>ix) Erect warning signs. x) Use an appropriate pesticide (minimal environmental impact). xi) Appropriate timing of application.</p>
AC4.2 Carry out pre-use and operational checks to the applicator and vehicle	<p>Assessment Criteria 4.1</p> <p>Applicator components, controls and types of nozzles:</p> <ul style="list-style-type: none"> a) Applicator components: <ul style="list-style-type: none"> i) Main spray tank ii) Pump iii) Fan iv) Pulsation damper v) Filling devices vi) Pressure gauge vii) Filters viii) Tank wash system ix) Clean water tank(s) x) Hand wash tank xi) Fan blades and adjustment, if applicable xii) Air deflector(s) xiii) Trash guard xiv) Nozzles xv) Diaphragm check valves xvi) Other components specific to the applicator. b) Applicator controls: <ul style="list-style-type: none"> i) Filling ii) Agitation iii) Pressure adjustment iv) Boom isolators v) On/off vi) Boom section pressure compensation vii) Tank drain viii) Fan speed ix) Other controls specific to the applicator. c) Nozzle types: <ul style="list-style-type: none"> i) Hollow cone air inclusion: <ul style="list-style-type: none"> • medium or coarse spray • used to reduce drift. ii) Hollow cone: <ul style="list-style-type: none"> • fine spray • used for good coverage. <p>Assessment Criteria 4.2</p> <p>Pre-use and operational checks to the applicator and vehicle:</p> <ul style="list-style-type: none"> a) Security of attachment to the vehicle: <ul style="list-style-type: none"> i) Fasteners tight ii) Straps inspected iii) Linkage secure iv) Sideways movement restricted v) Drawbar secure. b) Possible mechanical defects: <ul style="list-style-type: none"> i) Seized, worn or damaged controls/components ii) Nozzle damage and/or blockage iii) Electrical connectors. c) Applicator lubrication checks: <ul style="list-style-type: none"> i) Identification of lubrication points ii) Visual inspection of lubrication points iii) Visual inspection of levels. d) Remove, clean and refit an applicator filter:

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> i) Remove and clean ii) Contain spillage iii) Check for defects iv) Refit. e) Remove, clean and refit a nozzle: <ul style="list-style-type: none"> i) Remove and clean ii) Contain spillage iii) Check for defects iv) Refit. f) Pre-use checks to the vehicle: <ul style="list-style-type: none"> i) Compatibility of vehicle and applicator ii) Appropriate additional weights for stability iii) Guards in place and in good condition iv) Visual inspection of the wheels and tyres v) Fuel level is sufficient for intended duration vi) Engine, hydraulic and transmission oil levels are within acceptable limits vii) Coolant level is correct. g) Using the controls/control panel to ensure that the applicator is functioning correctly: <ul style="list-style-type: none"> i) Functions of controls/control panel ii) Recognition of malfunctions before and during operation iii) Switch to manual/test mode. h) Part fill the applicator: <ul style="list-style-type: none"> i) Suitable site selected ii) Part-fill using an appropriate method. i) Applicator leaks and correct spray patterns checks: <ul style="list-style-type: none"> i) Suitable site selected ii) Identify from nozzle chart the appropriate nozzle for use iii) Use higher than normal operating pressure iv) Visual check of applicator components for leaks v) Reset to normal pressure for nozzle fitted vi) Visual check of all nozzles for: <ul style="list-style-type: none"> • correct spray patterns • absence of blockages • streaking • pulsing.
AC4.3 Calibrate the applicator	<p>Assessment Criteria 4.3</p> <p>Calibrate the applicator:</p>
	<ul style="list-style-type: none"> a) Calibrate the applicator. b) Calculate application volume/nozzle output and check against product label information. c) Make applicator adjustments based on requirements. d) Factors that would affect calibration: <ul style="list-style-type: none"> i) Tyre size. ii) Engine speed. iii) Vehicle forward speed. iv) Number of nozzles. v) Nozzle fitted. vi) Row width. vii) Pressure.
AC5.1 Calculate and measure the required quantities of pesticide and water and add to the applicator	<p>Assessment Criteria 5.1</p> <p>Calculate and measure the required quantities of pesticide and water and add to the applicator:</p> <ul style="list-style-type: none"> a) Calculate the quantities of pesticide and water required: <ul style="list-style-type: none"> i) Amount of water required for specified area.

Assessment Criteria	Scope of study
AC5.2 Explain how to safely and accurately operate the applicator	<p>ii) Amount of pesticide required for specified area.</p> <p>iii) Amount of pesticide required for full tank.</p> <p>b) Measure quantities of pesticide and water and add to the applicator:</p> <ul style="list-style-type: none"> i) Correct selection and use of Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) (as required by the product label and/or Control of Substances Hazardous to Health (COSHH)/risk assessment) ii) Manual handling considerations iii) Correct mixing sequence iv) Adequate agitation v) Suitable site selected with provision for containment and access to a spill kit vi) Accurate measurement of pesticide and water vii) Correct filling procedure viii) Avoidance of spillage ix) Return concentrate pesticide to secure storage.
<p>AC5.2 Explain how to safely and accurately operate the applicator</p> <p>Assessment Criteria 5.2</p> <p>Safe and accurate operation of the applicator:</p>	<ul style="list-style-type: none"> a) Marking out the site to achieve accurate application: <ul style="list-style-type: none"> i) Crop rows. ii) Marker poles. iii) Use of Global Positioning System (GPS). b) Effects of increasing fan speed: <ul style="list-style-type: none"> i) Larger volume of air is produced, which can deliver the pesticide into a larger target with a higher crop density. ii) Increased risk of damage to delicate fruits or berries. iii) A larger volume of air could cause contamination/create excessive spray drift. c) Reasons for adjusting fan pitch: <ul style="list-style-type: none"> i) A larger volume of air can be produced at lower engine speeds to save fuel and machine wear. ii) A suitable volume of air can be achieved to deliver the pesticide to the target site. d) Reason why nozzles may be shut off: <ul style="list-style-type: none"> i) Crop density may vary at different heights. ii) Crop heights may vary. e) Procedure for refilling the applicator part way through application: <ul style="list-style-type: none"> i) Avoid contact with contaminated crop ii) Mark the point at which the applicator emptied iii) Refill applicator away from the application area iv) Recomence spraying where the applicator emptied. f) Actions to take when an applicator develops a fault during application: <ul style="list-style-type: none"> i) Select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) ii) Take care not to walk in contaminated crop iii) Fault identified and rectified if within the operator's level of capability and responsibility.
<p>AC5.3 Carry out safe and accurate application procedures</p> <p>Assessment Criteria 5.3</p> <p>Safe and accurate application procedures:</p>	<ul style="list-style-type: none"> a) Check wind speed and direction: <ul style="list-style-type: none"> i) Use of an anemometer. ii) Use of visual signs. iii) Use of a compass. b) Safe and accurate application procedures: <ul style="list-style-type: none"> i) Treatment area clearly identified ii) Set correct alignment of nozzles

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> iii) Operate controls to start and finish applying accurately at the beginning and end of each bout/row iv) Correct forward speed for site conditions v) Pressure maintained vi) Accurate matching of bouts vii) Area treated minimising overlaps and misses viii) Awareness of crop density and appropriate action taken (if applicable) ix) Avoidance of off target contamination/application. <p>c) Completion of an application record must be:</p> <ul style="list-style-type: none"> i) Accurate ii) Legible.
AC6.1 Explain how to manage and dispose of surplus dilute pesticide	<p>Assessment Criteria 6.1</p> <p>Managing and disposing of surplus dilute pesticide:</p> <ul style="list-style-type: none"> a) Managing surplus dilute pesticide: <ul style="list-style-type: none"> i) Below the maximum dose rate: apply to the original application target/site. ii) At maximum dose rate: apply to another untreated approved target/site. b) Disposing of surplus dilute pesticide: <ul style="list-style-type: none"> i) Treated by a specialist treatment facility on site. ii) Collected by a licensed waste disposal contractor.
AC6.2 Explain how to clean, decontaminate and store the applicator and the vehicle	<p>Assessment Criteria 6.2</p> <p>Cleaning, decontaminating and storing the applicator and the vehicle:</p> <ul style="list-style-type: none"> a) Cleaning and decontaminating the applicator and the vehicle: <ul style="list-style-type: none"> i) Reducing the risk of personal contamination: <ul style="list-style-type: none"> • select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE). ii) Reducing the risk of environmental contamination: <ul style="list-style-type: none"> • appropriate site. • safe disposal of contaminated washings. iii) Effective cleaning and decontamination: <ul style="list-style-type: none"> • ensure the applicator is made safe. • care to ensure contamination 'hot spots' are clean. • thorough washing of internal and external surfaces with water and suitable cleaning agent. • thorough flushing of systems. iv) When cleaning of the applicator should take place <ul style="list-style-type: none"> • after the application is completed. • if changing to a different product. • to avoid applicator damage from pesticide. • to carry out maintenance. b) Storage requirements for the applicator: <ul style="list-style-type: none"> i) Refer to manufacturer's handbook. ii) Clean and dry. iii) Inspect for wear and damage. iv) Replace any worn or damaged parts. v) Frost protection measures implemented. vi) Lubricate. vii) Undercover and out of direct sunlight. viii) Leave in a stable position. ix) In a secure area.

Unit 239 Operating a variable geometry sprayer with air assistance (PA3B)

Level:	2
GLH:	54
Assessment method:	Practical observation with oral questioning
Aim:	The purpose of this unit is for learners to safely operate a variable geometry sprayer with air assistance.

Learning Outcomes

- LO1 Understand the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use
- LO2 Read and interpret information on a product label
- LO3 Assess the environmental risks relating to the filling and application site
- LO4 Prepare and calibrate the applicator
- LO5 Operate the applicator
- LO6 Know how to carry out post-operational procedures

Assessment Criteria	Scope of study
AC1.1 Describe the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use	<p>Assessment Criteria 1.1</p> <p>Legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use:</p> <ul style="list-style-type: none">a) Operator's responsibility under legislation:<ul style="list-style-type: none">i) Follow product label requirements for correct application of pesticides.ii) Follow employer instructions and training for applicator use.iii) Use Integrated Pest Management (IPM) techniques where possible.iv) Protect flora and fauna from harm when carrying out work.v) Ensure public access on foot to area of land is not prohibited/restricted during work unless permission is granted.vi) Do not apply pesticides to public rights of way unless specifically for managing access.b) Operator's responsibility under regulations:<ul style="list-style-type: none">i) Follow obligations on the use and disposal of Plant Protection Products (PPPs), including packaging.ii) Read, understand and comply with Control of Substances Hazardous to Health (COSHH)/risk assessments and adhere to the control measures put in place.

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> iii) Use, maintain and store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) as provided and instructed. iv) Follow instructions and training in the inspection, use, calibration and maintenance of applicators. v) Follow compliance requirements for the management and disposal of waste. vi) Be prepared for inspection of PPPs record keeping and storage. vii) Know the company policy on how to report Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) to the HSE (Health and Safety Executive). c) Operator's responsibility under Pesticide Code of Practice (CoP) for using Plant Protection Products (PPPs): <ul style="list-style-type: none"> i) Hold (or be under supervision of a holder of) a specified certificate directly related to the application method and/or applicator being used (Certificates of Competence (CoC)). ii) Apply pesticides safely and effectively following product information and complying with current legislation. d) Work in accordance with the UK Pesticides National Action Plan (NAP): <ul style="list-style-type: none"> i) Use IPM and alternative approaches or techniques where possible. ii) Reduce impact by applying pesticides at appropriate times, safely monitor and contain active substances which are particularly harmful. iii) Ensure storage, handling and disposal operations do not endanger human health or the environment, comply with inspections, enforcement and other official control activities.
AC1.2 State the requirements for protecting the operator from contamination and physical harm following industry best practice	<p>Assessment Criteria 1.2</p> <p>Requirements for protecting the operator from contamination and physical harm following industry best practice:</p> <ul style="list-style-type: none"> a) Vehicle features that protect the operator from pesticide contamination: <ul style="list-style-type: none"> i) Sealed cab: <ul style="list-style-type: none"> • carbon filter fitted. • use of in-cab controls. • functional ventilation system. • closed windows. • an external locker to store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE). • pressurised pesticide components sited outside the cab. ii) Open cab/canopy/platform: <ul style="list-style-type: none"> • requirement to always wear appropriate PPE/RPE. • isolation from pressurised pesticide components. b) Safety considerations when driving on a public highway: <ul style="list-style-type: none"> i) Hold the correct category of license. ii) Comply with operator age requirements. iii) Adhere to road/vehicle speed limits. iv) Comply with the highway code. v) Independent brakes coupled together/locked. vi) Instability of vehicle at high speeds. vii) Observe loading capacities on All-Terrain Vehicles (ATVs). c) Safe driving on uneven/sloping terrain: <ul style="list-style-type: none"> i) Assess ground conditions and slope. ii) Select four-wheel drive (if fitted). iii) Appropriate speed for the terrain. iv) Correct gear selected for terrain to avoid changing gear on slope. v) Effect of changing load on stability. vi) Use of counterbalance weights for stability. vii) Correct turning procedure. viii) Keep centre of gravity as low as possible.

Assessment Criteria	Scope of study
AC2.1 Read and interpret information on a product label	<p>Assessment Criteria 2.1</p> <p>Information on a product label:</p> <ul style="list-style-type: none"> a) Product information: <ul style="list-style-type: none"> i) Product name ii) Active substance(s) (ingredients) iii) Product group symbol iv) Approval number v) Reason for use vi) Expiry date/shelf life. b) Important information: <ul style="list-style-type: none"> i) Approved field of use ii) Maximum individual dose iii) Maximum total dose iv) Maximum number of treatments v) Latest time of application. c) Safety precautions: <ul style="list-style-type: none"> i) Operator protection ii) Environmental protection iii) Buffer zone iv) Restrictions on use v) Specific product precautions. d) Crop specific information: <ul style="list-style-type: none"> i) Crop/target ii) Dose rate iii) Timing of application(s) iv) Water volume. e) Mixing and application information: <ul style="list-style-type: none"> i) Appropriate for applicator ii) Filling iii) Recommended nozzles iv) Recommended pressure v) Reduced volume applications vi) Spray quality vii) Compatibility viii) Label information unique to the product.
AC3.1 Identify environmental risks to the filling and application site and explain how to minimise these risks	<p>Assessment Criteria 3.1</p> <p>Environmental risks to the filling and application site and how to minimise these risks:</p> <ul style="list-style-type: none"> a) Environmental factors at risk at the filling and application site: <ul style="list-style-type: none"> i) Ground conditions. ii) Water courses. iii) Drains. iv) Boreholes. v) Environmental margins/strips/areas. vi) Wildlife. vii) Beneficial insects. viii) Non-target plants. ix) Sensitive crops/areas. x) Hedgerows. xi) Housing. xii) Public access. xiii) Other environmental factors relevant to the site. b) Minimise risks to the filling and application site: <ul style="list-style-type: none"> i) Check and maintain application rate. ii) Monitor weather conditions. iii) Avoid spray drift. iv) Avoid off target application.

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> v) Avoid surface run-off. vi) Observe buffer zones or alter in line with current schemes. vii) Observe environmental margins/strips/areas. viii) Inform neighbours. ix) Erect warning signs. x) Use an appropriate pesticide (minimal environmental impact). xi) Appropriate timing of application.
AC4.1 Identify applicator components, controls and types of nozzles	<p>Assessment Criteria 4.1</p> <p>Applicator components, controls and types of nozzles:</p> <ul style="list-style-type: none"> a) Applicator components: <ul style="list-style-type: none"> i) Main spray tank ii) Pump iii) Fan iv) Boom break-backs v) Air outlets vi) Pulsation damper vii) Filling devices viii) Pressure gauge ix) Filters x) Clean water tank(s) xi) Hand wash tank xii) Tank wash system xiii) Nozzles xiv) Diaphragm check valves xv) Other components specific to the applicator. b) Applicator controls: <ul style="list-style-type: none"> i) Filling ii) Agitation iii) Pressure adjustment iv) Nozzle angle adjustment v) Air outlet angle adjustment vi) Boom isolators vii) On/off viii) Boom section pressure compensation ix) Tank drain x) Fan speed xi) Other controls specific to the applicator. c) Nozzle types: <ul style="list-style-type: none"> i) Flat fan: <ul style="list-style-type: none"> • fine, medium or coarse spray • used for most applications. ii) Hollow cone air inclusion: <ul style="list-style-type: none"> • medium or coarse spray • used to reduce drift. iii) Hollow cone: <ul style="list-style-type: none"> • fine spray • used for good coverage.
AC4.2 Carry out pre-use and operational checks to the applicator and vehicle	<p>Assessment Criteria 4.2</p> <p>Pre-use and operational checks to the applicator and vehicle:</p> <ul style="list-style-type: none"> a) Security of attachment to the vehicle: <ul style="list-style-type: none"> i) Fasteners tight ii) Straps inspected and adjusted if necessary iii) Linkage secure iv) Sideways movement restricted v) Drawbar secure.

- b) Possible mechanical defects:
 - i) Seized, worn or damaged controls/components
 - ii) Nozzle damage and/or blockage
 - iii) Electrical connectors.
- c) Applicator lubrication checks:
 - i) Identification of lubrication points
 - ii) Visual inspection of lubrication points
 - iii) Visual inspection of levels.
- d) Remove, clean and refit an applicator filter:
 - i) Remove and clean
 - ii) Contain spillage
 - iii) Check for defects
 - iv) Refit.
- e) Remove, clean and refit a nozzle:
 - i) Remove and clean
 - ii) Contain spillage
 - iii) Check for defects
 - iv) Refit.
- f) Pre-use checks to the vehicle:
 - i) Compatibility of vehicle and applicator
 - ii) Appropriate additional weights for stability
 - iii) Guards in place and in good condition
 - iv) Visual inspection of the wheels and tyres
 - v) Fuel level is sufficient for intended duration
 - vi) Engine, hydraulic and transmission oil levels are within acceptable limits
 - vii) Coolant level is correct.
- g) Using the controls/control panel to ensure that the applicator is functioning correctly:
 - i) Functions of controls/control panel
 - ii) Recognition of malfunctions before and during operation
 - iii) Switch to manual/test mode.
- h) Part fill the applicator:
 - i) Suitable site selected
 - ii) Part-fill using an appropriate method.
- i) Unfold the boom:
 - i) Safe unfolding of booms to avoid:
 - personal contamination
 - Over Head Power Lines (OHPL)
 - structural hazards.
- j) Boom settings, suspension and break-back devices checks:
 - i) Boom suspension operational
 - ii) Break-back efficiency
 - iii) Height adjustment.
- k) Applicator liquid and air leaks and correct spray patterns checks:
 - i) Suitable site selected
 - ii) Identify from nozzle chart the appropriate nozzle for use
 - iii) Use higher than normal operating pressure
 - iv) Visual check of applicator components for liquid and air leaks
 - v) Reset to normal pressure for nozzle fitted
 - vi) Visual check of all nozzles for:
 - correct spray patterns
 - absence of blockages
 - streaking
 - pulsing
 - correct alignment.

Assessment Criteria	Scope of study
AC4.3 Calibrate the applicator	<p>Assessment Criteria 4.3</p> <p>Calibrate the applicator:</p> <ol style="list-style-type: none"> Calibrate the applicator. Calculate application volume/nozzle output and check against product label information. Make applicator adjustments based on requirements. Factors that would affect calibration: <ol style="list-style-type: none"> Tyre size. Engine speed. Vehicle forward speed. Number of nozzles. Nozzle fitted. Row width. Pressure.
AC5.1 Calculate and measure the required quantities of pesticide and water and add to the applicator	<p>Assessment Criteria 5.1</p> <p>Calculate and measure the required quantities of pesticide and water and add to the applicator:</p> <ol style="list-style-type: none"> Calculate the quantities of pesticide and water required: <ol style="list-style-type: none"> Amount of water required for specified area. Amount of pesticide required for specified area. Amount of pesticide required for full tank. Measure quantities of pesticide and water and add to the applicator: <ol style="list-style-type: none"> Correct selection and use of Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) (as required by the product label and/or Control of Substances Hazardous to Health (COSHH)/risk assessment) Manual handling considerations Correct mixing sequence Adequate agitation Suitable site selected with provision for containment and access to a spill kit Accurate measurement of pesticide and water Correct filling procedure Avoidance of spillage Return concentrate pesticide to secure storage.
AC5.2 Explain how to safely and accurately operate the applicator	<p>Assessment Criteria 5.2</p> <p>Safe and accurate operation of the applicator:</p> <ol style="list-style-type: none"> Marking out the site to achieve accurate application: <ol style="list-style-type: none"> Crop rows. Marker poles. Use of Global Positioning System (GPS). Effects of increasing fan flow: <ol style="list-style-type: none"> Larger volume of air is produced, which can deliver the pesticide into a larger target with a higher crop density. Increased risk of damage to delicate fruits or berries. A larger volume of air could create excessive spray drift. Reason why it is necessary to change the geometry of the boom and/or angle of the nozzles for different crops/crop stages: <ol style="list-style-type: none"> Crop density may vary at different heights. Crop heights may vary. Procedure for refilling the applicator part way through application: <ol style="list-style-type: none"> Avoid contact with contaminated crop Mark the point at which the applicator emptied Refill applicator away from the application area

Assessment Criteria**Scope of study**

- iv) Recommence spraying where the applicator emptied.
- e) Actions to take when an applicator develops a fault during application:
 - i) Select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE)
 - ii) Take care not to walk in contaminated crop
 - iii) Fault identified and rectified if within the operator's level of capability and responsibility.

AC5.3 Carry out safe and accurate application procedures

Assessment Criteria 5.3

Safe and accurate application procedures:

- a) Check wind speed and direction:
 - i) Use of an anemometer.
 - ii) Use of visual signs.
 - iii) Use of a compass.
- b) Safe and accurate application procedures:
 - i) Treatment area clearly identified
 - ii) Set correct alignment of nozzles
 - iii) Operate controls to start and finish applying accurately at the beginning and end of each bout/row
 - iv) Correct forward speed for site conditions
 - v) Pressure maintained
 - vi) Accurate matching of bouts
 - vii) Area treated minimising overlaps and misses
 - viii) Awareness of crop density and appropriate action taken (if applicable)
 - ix) Avoidance of off target contamination/application.
- c) Completion of an application record must be:
 - i) Accurate
 - ii) Legible.

AC6.1 Explain how to manage and dispose of surplus dilute pesticide

Assessment Criteria 6.1

Managing and disposing of surplus dilute pesticide:

- a) Managing surplus dilute pesticide:
 - i) Below the maximum dose rate: apply to the original application target/site.
 - ii) At maximum dose rate: apply to another untreated approved target/site.
- b) Disposing of surplus dilute pesticide:
 - i) Treated by a specialist treatment facility on site.
 - ii) Collected by a licensed waste disposal contractor.

AC6.2 Explain how to clean, decontaminate and store the applicator and the vehicle

Assessment Criteria 6.2

Cleaning, decontaminating and storing the applicator and the vehicle:

- a) Cleaning and decontaminating the applicator and the vehicle:
 - i) Reducing the risk of personal contamination:
 - select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE).
 - ii) Reducing the risk of environmental contamination:
 - appropriate site.
 - safe disposal of contaminated washings.
 - iii) Effective cleaning and decontamination:
 - ensure the applicator is made safe
 - care to ensure contamination 'hot spots' are clean.
 - thorough washing of internal and external surfaces with water and suitable cleaning agent.
 - thorough flushing of systems.

Assessment Criteria	Scope of study
	<p>iv) When cleaning of the applicator should take place</p> <ul style="list-style-type: none"> • after the application is completed. • if changing to a different product. • to avoid applicator damage from pesticide. • to carry out maintenance. <p>b) Storage requirements for the applicator:</p> <ul style="list-style-type: none"> i) Refer to manufacturer's handbook. ii) Clean and dry. iii) Inspect for wear and damage. iv) Replace any worn or damaged parts. v) Frost protection measures implemented. vi) Lubricate. vii) Undercover and out of direct sunlight. viii) Leave in a stable position. ix) In a secure area.

Unit 240 Operating a variable geometry sprayer without air assistance (PA3C)

Level:	2
GLH:	54
Assessment method:	Practical observation with oral questioning
Aim:	The purpose of this unit is for learners to safely operate a variable geometry sprayer without air assistance.

Learning Outcomes

- LO1 Understand the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use
- LO2 Read and interpret information on a product label
- LO3 Assess the environmental risks relating to the filling and application site
- LO4 Prepare and calibrate the applicator
- LO5 Operate the applicator
- LO6 Know how to carry out post-operational procedures

Assessment Criteria	Scope of study
AC1.1 Describe the legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use	<p>Assessment Criteria 1.1</p> <p>Legislative, regulatory and Codes of Practice (CoP) requirements relating to applicator use:</p> <ul style="list-style-type: none">a) Operator's responsibility under legislation:<ul style="list-style-type: none">i) Follow product label requirements for correct application of pesticides.ii) Follow employer instructions and training for applicator use.iii) Use Integrated Pest Management (IPM) techniques where possible.iv) Protect flora and fauna from harm when carrying out work.v) Ensure public access on foot to area of land is not prohibited/restricted during work unless permission is granted.vi) Do not apply pesticides to public rights of way unless specifically for managing access.b) Operator's responsibility under regulations:<ul style="list-style-type: none">i) Follow obligations on the use and disposal of Plant Protection Products (PPPs), including packaging.ii) Read, understand and comply with Control of Substances Hazardous to Health (COSHH)/risk assessments and adhere to the control measures put in place.iii) Use, maintain and store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) as provided and instructed.

- iv) Follow instructions and training in the inspection, use, calibration and maintenance of applicators.
- v) Follow compliance requirements for the management and disposal of waste.
- vi) Be prepared for inspection of PPPs record keeping and storage.
- vii) Know the company policy on how to report Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) to the HSE (Health and Safety Executive).
- c) Operator's responsibility under Pesticide Code of Practice (CoP) for using Plant Protection Products (PPPs):
 - i) Hold (or be under supervision of a holder of) a specified certificate directly related to the application method and/or applicator being used (Certificates of Competence (CoC)).
 - ii) Apply pesticides safely and effectively following product information and complying with current legislation.
- d) Work in accordance with the UK Pesticides National Action Plan (NAP):
 - i) Use IPM and alternative approaches or techniques where possible.
 - ii) Reduce impact by applying pesticides at appropriate times, safely monitor and contain active substances which are particularly harmful.
 - iii) Ensure storage, handling and disposal operations do not endanger human health or the environment, comply with inspections, enforcement and other official control activities.

AC1.2 State the requirements for protecting the operator from contamination and physical harm following industry best practice

Assessment Criteria 1.2

Requirements for protecting the operator from contamination and physical harm following industry best practice:

- a) Vehicle features that protect the operator from pesticide contamination:
 - i) Sealed cab:
 - carbon filter fitted.
 - use of in-cab controls.
 - functional ventilation system.
 - closed windows.
 - an external locker to store Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE).
 - pressurised pesticide components sited outside the cab.
 - ii) Open cab/canopy/platform:
 - requirement to always wear appropriate PPE/RPE.
 - isolation from pressurised pesticide components.
- b) Safety considerations when driving on a public highway:
 - i) Hold the correct category of license.
 - ii) Comply with operator age requirements.
 - iii) Adhere to road/vehicle speed limits.
 - iv) Comply with the highway code.
 - v) Independent brakes coupled together/locked.
 - vi) Instability of vehicle at high speeds.
 - vii) Observe loading capacities on All-Terrain Vehicles (ATVs)
- c) Safe driving on uneven/sloping terrain:
 - i) Assess ground conditions and slope.
 - ii) Select four-wheel drive (if fitted).
 - iii) Appropriate speed for the terrain.
 - iv) Correct gear selected for terrain to avoid changing gear on slope.
 - v) Effect of changing load on stability.
 - vi) Use of counterbalance weights for stability.
 - vii) Correct turning procedure.
 - viii) Keep centre of gravity as low as possible.

Assessment Criteria	Scope of study
AC2.1 Read and interpret information on a product label	<p>Assessment Criteria 2.1</p> <p>Information on a product label:</p> <ul style="list-style-type: none"> a) Product information: <ul style="list-style-type: none"> i) Product name ii) Active substance(s) (ingredients) iii) Product group symbol iv) Approval number v) Reason for use vi) Expiry date/shelf life. b) Important information: <ul style="list-style-type: none"> i) Approved field of use ii) Maximum individual dose iii) Maximum total dose iv) Maximum number of treatments v) Latest time of application. c) Safety precautions: <ul style="list-style-type: none"> i) Operator protection ii) Environmental protection iii) Buffer zone iv) Restrictions on use v) Specific product precautions. d) Crop specific information: <ul style="list-style-type: none"> i) Crop/target ii) Dose rate iii) Timing of application(s) iv) Water volume. e) Mixing and application information: <ul style="list-style-type: none"> i) Appropriate for applicator ii) Filling iii) Recommended nozzles iv) Recommended pressure v) Reduced volume applications vi) Spray quality vii) Compatibility viii) Label information unique to the product.
AC3.1 Identify environmental risks to the filling and application site and explain how to minimise these risks	<p>Assessment Criteria 3.1</p> <p>Environmental risks to the filling and application site and how to minimise these risks:</p> <ul style="list-style-type: none"> a) Environmental factors at risk at the filling and application site: <ul style="list-style-type: none"> i) Ground conditions. ii) Water courses. iii) Drains. iv) Boreholes. v) Environmental margins/strips/areas. vi) Wildlife. vii) Beneficial insects. viii) Non-target plants. ix) Sensitive crops/areas. x) Hedgerows. xi) Housing. xii) Public access. xiii) Other environmental factors relevant to the site. b) Minimise risks to the filling and application site: <ul style="list-style-type: none"> i) Check and maintain application rate. ii) Monitor weather conditions. iii) Avoid spray drift. iv) Avoid off target application.

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> v) Avoid surface run-off. vi) Observe buffer zones or alter in line with current schemes. vii) Observe environmental margins/strips/areas. viii) Inform neighbours. ix) Erect warning signs. x) Use an appropriate pesticide (minimal environmental impact). xi) Appropriate timing of application.
AC4.1 Identify applicator components, controls and types of nozzles	<p>Assessment Criteria 4.1</p> <p>Applicator components, controls and types of nozzles:</p>
	<ul style="list-style-type: none"> a) Applicator components: <ul style="list-style-type: none"> i) Main spray tank ii) Pump iii) Boom break-backs iv) Pulsation damper v) Filling devices vi) Pressure gauge vii) Filters viii) Tank wash system ix) Clean water tank(s) x) Hand wash tank xi) Nozzles xii) Diaphragm check valves xiii) Other components specific to the applicator. b) Applicator controls: <ul style="list-style-type: none"> i) Filling ii) Agitation iii) Pressure adjustment iv) Boom isolators v) On/off vi) Boom section pressure compensation vii) Tank drain viii) Other controls specific to the applicator. c) Nozzle types: <ul style="list-style-type: none"> i) Flat fan: <ul style="list-style-type: none"> • fine, medium or coarse spray • used for most applications. ii) Hollow cone air inclusion: <ul style="list-style-type: none"> • medium or coarse spray • used to reduce drift. iii) Hollow cone: <ul style="list-style-type: none"> • fine spray • used for good coverage.
AC4.2 Carry out pre-use and operational checks to the applicator and vehicle	<p>Assessment Criteria 4.2</p> <p>Pre-use and operational checks to the applicator and vehicle:</p> <ul style="list-style-type: none"> a) Security of attachment to the vehicle: <ul style="list-style-type: none"> i) Fasteners tight ii) Straps inspected iii) Linkage secure iv) Sideways movement restricted v) Drawbar secure. b) Possible mechanical defects: <ul style="list-style-type: none"> i) Seized, worn or damaged controls/components ii) Nozzle damage and/or blockage iii) Electrical connectors. c) Applicator lubrication checks: <ul style="list-style-type: none"> i) Identification of lubrication points

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> ii) Visual inspection of lubrication points iii) Visual inspection of levels. d) Remove, clean and refit an applicator filter: <ul style="list-style-type: none"> i) Remove and clean ii) Contain spillage iii) Check for defects iv) Refit. e) Remove, clean and refit a nozzle: <ul style="list-style-type: none"> i) Remove and clean ii) Contain spillage iii) Check for defects iv) Refit. f) Pre-use checks to the vehicle: <ul style="list-style-type: none"> i) Compatibility of vehicle and applicator ii) Appropriate additional weights for stability iii) Guards in place and in good condition iv) Visual inspection of the wheels and tyres v) Fuel level is sufficient for intended duration vi) Engine, hydraulic and transmission oil levels are within acceptable limits vii) Coolant level is correct. g) Using the controls/control panel to ensure that the applicator is functioning correctly: <ul style="list-style-type: none"> i) Functions of controls/control panel ii) Recognition of malfunctions before and during operation iii) Switch to manual/test mode. h) Part fill the applicator: <ul style="list-style-type: none"> i) Suitable site selected with a clean water supply ii) Part-fill using an appropriate method. i) Unfold the boom: <ul style="list-style-type: none"> i) Safe unfolding of booms to avoid: <ul style="list-style-type: none"> • personal contamination • Over Head Power Lines (OHPL) • structural hazards. j) Boom settings, suspension and break-back devices checks: <ul style="list-style-type: none"> i) Boom suspension operational ii) Break-back efficiency iii) Height adjustment. k) Applicator liquid leaks and correct spray patterns checks: <ul style="list-style-type: none"> i) Suitable site selected ii) Identify from nozzle chart the appropriate nozzle for use iii) Use higher than normal operating pressure iv) Visual check of applicator components for liquid leaks v) Reset to normal pressure for nozzle fitted vi) Visual check of all nozzles for: <ul style="list-style-type: none"> • correct spray patterns • absence of blockages • streaking • pulsing • correct alignment.

AC4.3 Calibrate the applicator

Assessment Criteria 4.3

Calibrate the applicator:

- a) Calibrate the applicator.
- b) Calculate application volume/nozzle output and check against product label information.
- c) Make applicator adjustments based on requirements.
- d) Factors that would affect calibration:
 - i) Tyre size.

Assessment Criteria	Scope of study
AC5.1 Calculate and measure the required quantities of pesticide and water and add to the applicator	<p>ii) Engine speed. iii) Vehicle forward speed. iv) Number of nozzles. v) Nozzle fitted. vi) Row width. vii) Pressure.</p> <p>Assessment Criteria 5.1</p> <p>Calculate and measure the required quantities of pesticide and water and add to the applicator:</p> <p>a) Calculate the quantities of pesticide and water required: i) Amount of water required for specified area. ii) Amount of pesticide required for specified area. iii) Amount of pesticide required for full tank.</p> <p>b) Measure quantities of pesticide and water and add to the applicator: i) Correct selection and use of Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) (as required by the product label and/or Control of Substances Hazardous to Health (COSHH)/risk assessment) ii) Manual handling considerations iii) Correct mixing sequence iv) Adequate agitation v) Suitable site selected with provision for containment and access to a spill kit vi) Accurate measurement of pesticide and water vii) Correct filling procedure viii) Avoidance of spillage ix) Return concentrate pesticide to secure storage.</p>
AC5.2 Explain how to safely and accurately operate the applicator	<p>Assessment Criteria 5.2</p> <p>Safe and accurate operation of the applicator:</p> <p>a) Marking out the site to achieve accurate application: i) Crop rows. ii) Marker poles. iii) Use of Global Positioning System (GPS).</p> <p>b) Reason why it is necessary to change the geometry of the boom and/or angle of the nozzles for different crops/crop stages: i) Crop density may vary at different heights. ii) Crop heights may vary.</p> <p>c) Procedure for refilling the applicator part way through application: i) Avoid contact with contaminated crop ii) Mark the point at which the applicator emptied iii) Refill applicator away from the application area iv) Recomence spraying where the applicator emptied.</p> <p>d) Actions to take when an applicator develops a fault during application: i) Select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE) ii) Take care not to walk in contaminated crop iii) Fault identified and rectified if within the operator's level of capability and responsibility.</p>
AC5.3 Carry out safe and accurate application procedures	<p>Assessment Criteria 5.3</p> <p>Safe and accurate application procedures:</p> <p>a) Check wind speed and direction: i) Use of an anemometer. ii) Use of visual signs.</p>

Assessment Criteria	Scope of study
	<ul style="list-style-type: none"> iii) Use of a compass. b) Safe and accurate application procedures: <ul style="list-style-type: none"> i) Treatment area clearly identified ii) Set correct alignment of nozzles iii) Operate controls to start and finish applying accurately at the beginning and end of each bout/row iv) Correct forward speed for site conditions v) Pressure maintained vi) Accurate matching of bouts vii) Area treated minimising overlaps and misses viii) Awareness of crop density and appropriate action taken (if applicable) ix) Avoidance of off target contamination/application. c) Completion of an application record must be: <ul style="list-style-type: none"> i) Accurate ii) Legible.
AC6.1 Explain how to manage and dispose of surplus dilute pesticide	<p>Assessment Criteria 6.1</p> <p>Managing and disposing of surplus dilute pesticide:</p> <ul style="list-style-type: none"> a) Managing surplus dilute pesticide: <ul style="list-style-type: none"> i) Below the maximum dose rate: apply to the original application target/site. ii) At maximum dose rate: apply to another untreated approved target/site. b) Disposing of surplus dilute pesticide: <ul style="list-style-type: none"> i) Treated by a specialist treatment facility on site. ii) Collected by a licensed waste disposal contractor.
AC6.2 Explain how to clean, decontaminate and store the applicator and the vehicle	<p>Assessment Criteria 6.2</p> <p>Cleaning, decontaminating and storing the applicator and the vehicle:</p> <ul style="list-style-type: none"> a) Cleaning and decontaminating the applicator and the vehicle: <ul style="list-style-type: none"> i) Reducing the risk of personal contamination: <ul style="list-style-type: none"> • select and use appropriate Personal Protective Equipment (PPE)/Respiratory Protective Equipment (RPE). ii) Reducing the risk of environmental contamination: <ul style="list-style-type: none"> • appropriate site. • safe disposal of contaminated washings. iii) Effective cleaning and decontamination: <ul style="list-style-type: none"> • ensure the applicator is made safe • care to ensure contamination 'hot spots' are clean. • thorough washing of internal and external surfaces with water and suitable cleaning agent. • thorough flushing of systems. iv) When cleaning of the applicator should take place <ul style="list-style-type: none"> • after the application is completed. • if changing to a different product. • to avoid applicator damage from pesticide. • to carry out maintenance. b) Storage requirements for the applicator: <ul style="list-style-type: none"> i) Refer to manufacturer's handbook. ii) Clean and dry. iii) Inspect for wear and damage. iv) Replace any worn or damaged parts. v) Frost protection measures implemented. vi) Lubricate. vii) Undercover and out of direct sunlight. viii) Leave in a stable position. ix) In a secure area.

Supporting information

Evidence requirements

Practical observation and oral questioning by a City & Guilds NPTC approved assessor.

A prepopulated Record Of Assessment (ROA) must be completed by the assessor following an assessment. **All** Assessment Criteria (AC) must be completed as either 'met' or 'not met' for each outcome on the ROA.

The assessment(s) can be achieved at **pass** only. **All** Assessment Criteria (AC) must be met to achieve a pass result, if any AC is not met the candidate is unsuccessful and will fail the assessment.

Candidates who undertake this assessment and have met the requirements are reminded of their legal obligation to receive/undertake appropriate additional training in the use of any equipment that differs from that used during the assessment, but which they are nevertheless qualified to use.

Unit guidance

The delivery of this qualification should be carried out in a real-life working environment with a suitable site with crop and/or target.

Learners should be familiar with all equipment and machinery that they are going to operate.

Provision must be made to comply with environmental and sustainability regulations and standards; segregation of resources for reuse, recycling and disposal should be implemented.

New technologies should be included within delivery of this qualification to allow learners to practise without wasting products. Artificial intelligence (AI) and virtual reality (VR) could also be used to deliver knowledge and practical sessions.

It is recommended that the delivery integrates visits/engagement with local industry and employers to ensure that the implementation of legislation, policies, codes of practice and industry best practice are up to date.

Safe practice

The assessor and candidate must wear Personal Protective Equipment (PPE) and, if required, Respiratory Protective Equipment (RPE) during the practical activities.

Assessors must ensure a site-specific risk assessment is carried out and sufficient control measures are implemented.

A First Aid kit meeting current regulations, of the appropriate size for the number of persons on site, must be available.

All equipment and/or machinery used in the delivery and assessment of the qualification must comply with manufacturer's guidelines and the relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998. Equipment and/or machines must be used/operated in such a way that the learner, assessor, other persons and/or equipment and/or machinery are not endangered.

A breach of Health and Safety that puts any person at risk during the assessment process will result in the assessment being terminated and the candidate not meeting the required standard. The assessor may stop the assessment on the grounds of safety at any time at their discretion.

Suggested learning resources

Health and Safety Executive (HSE) information sheet AIS16 & AIS22 Available via:

<https://www.hse.gov.uk/pubns/ais16.htm>

National Sprayer Testing Scheme (NSTS). Available via:

<https://www.nsts.org.uk/Documents-Links>

Pesticides Code of Practice. Available via: <https://www.hse.gov.uk/pesticides/using-pesticides/codes-of-practice/code-of-practice-for-using-plant-protection-products.htm>

The Official Controls (Plant Protection Products) Regulations 2020. Available via:

<https://www.legislation.gov.uk/uksi/2020/552/contents>

UK Pesticides National Action Plan 2025: Working for a more sustainable future. Available via:

<https://www.gov.uk/government/publications/uk-pesticides-national-action-plan-2025/uk-pesticides-national-action-plan-2025-working-for-a-more-sustainable-future>

Voluntary Initiative. Available via: <https://voluntaryinitiative.org.uk/>

Additional information may be sought from the relevant manufacturer's operator's manual, product information or database, nozzle chart(s) or any other publication by the government or a government agency.

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 www.cityandguilds.com or click on the links below:

Centre handbook: quality assurance standards

This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on:

- centre quality assurance criteria and monitoring activities
- administration and assessment systems
- centre-facing support teams at City & Guilds/ILM
- centre quality assurance roles and responsibilities.

The centre handbook should be used to ensure compliance with the terms and conditions of the centre contract.

Centre assessment: quality assurance standards

This document sets out the minimum common quality assurance requirements for our qualifications that feature centre-assessed components.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides guidance on administering portfolios and controlled assessments, including a definition of supervised conditions.

Access arrangements: when and how applications need to be made to City & Guilds

This provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre document library** also contains useful information on such things as:

- conducting examinations
- registering learners
- appeals and malpractice.

Useful contacts

Please visit the **contact us** section of the City & Guilds website.

City & Guilds

City & Guilds is the global skills partner, empowering people, organisations and economies to develop the skills they need for growth. With almost 150 years of trusted expertise, we support people into work, help them develop on the job and move into the next job.

We work with Governments, employers, training providers, colleges and industry stakeholders to design and deliver high-quality training, qualifications, assessments and credentials that lead to meaningful career progression. We understand the life changing link between skills development, social mobility and success. Our solutions span critical sectors including construction, engineering, transport, energy and electrical, serving over 1 million learners annually.

Through our comprehensive portfolio of brands and trusted global network, we set industry-wide standards for technical, behavioural and commercial skills to improve performance and productivity. We believe you can achieve your potential - and we're here to help make it happen.

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