

Component Specification

Mechanical Pesticide Application

NFQ Level 5

5N20435

1. Component Details

Title	Mechanical Pesticide Application
Teideal as Gaeilge	Lotnaidicídí a Úsáid go Meicniúil
Award Class	Minor
Code	5N20435
Level	5
Credit Value	5
Purpose	The purpose of this award is to equip the learner with the knowledge, skill and competence to work independently applying pesticides by different methods, in accordance with best practice, using mechanically propelled equipment
Learning Outcomes	<p>Learners will be able to:</p> <ol style="list-style-type: none">1 Describe the range of mechanically propelled equipment for the application of plant protection products2 Discuss the principles of application technology necessary for the proper application of pesticides in respect of the environment, applicator components, calibration, maintenance, field operating procedures, precautions and environmental considerations3 Describe the working principles of a boom sprayer4 Describe the working principles of a machine mounted slug pellet applicator5 Describe the working principles of a trailed weedlick

- 6 Discuss legislative requirements pertaining to pesticide applicators
- 7 Interpret pesticide label information in respect of pictograms, product name, precautionary statements, class designation, registration number, purpose, precautions, first aid instruction, toxicology information, disposal, notice to user, safety data sheets (SDS) and directions for use
- 8 Prepare boom sprayer for work, including calibration, in accordance with safe recommended good practice and manufacturer's instructions
- 9 Make up a pesticide spray mix in accordance with good practice including the pesticide product label dosage recommendations and the application area
- 10 Apply a pesticide mix with a boom sprayer in a safe and efficient manner in accordance with recommended good practice.
- 11 Apply pesticide with a hand lance attached to a boom sprayer in accordance with recommended good practice
- 12 Set up, calibrate and operate a mechanically propelled weed-licker according to the operators manual using recommended good practice
- 13 Set up, calibrate and operate a mechanically propelled full width broadcast or placement pesticide pellet applicator according to the operators manual using recommended good practice
- 14 Store a boom sprayer and personal protective equipment in a safe and efficient manner according to manufacturer's instructions
- 15 Store a mechanically propelled weed-licker and slug pellet applicators and personal protective equipment in a safe and efficient manner according to manufacturer's instructions

Assessment

General Information

Details of FET assessment requirements are set out in [Assessment Guidelines for Providers](#).

All FET assessment is criterion referenced. Successful achievement of the award is based on learners attaining the required standards of knowledge, skill or competence.

The techniques set out below are considered the optimum approach to assessment for this component. In exceptional

circumstances providers may identify alternative assessment techniques through the provider's application for programme validation which are **reliable** and **valid** but which are more appropriate to their context.

Assessment of a number of components may be integrated across programmes for delivery, provided that the learning outcomes of each minor award are assessed.

Group or team work may form part of the assessment, provided each learner's achievement is separately assessed.

All providers are required to submit an assessment plan as part of their application for programme validation. Assessment Plans will include information relating to scheduling and integration of assessment. See current FET validation guidelines at www.qqi.ie.

Assessment Techniques

In order to demonstrate that they have reached the standards of knowledge, skill and competence identified in all the learning outcomes, learners are required to complete the assessment(s) below.

The assessor is responsible for devising assessment instruments (e.g. project and assignment briefs, examination papers), assessment criteria and mark sheets, consistent with the techniques identified below and FETAC's assessment requirements.

Programme validation will require providers to map each learning outcome to its associated assessment technique. See current FET validation guidelines at www.qqi.ie.

All learning outcomes **must** be assessed and achieved

Skills Demonstration	50%
Skills Demonstration	15%
Skills Demonstration	15%
Examination - Theory	20%

Description

Skills Demonstration

A skills demonstration is used to assess a wide range of practical based learning outcomes including practical skills and knowledge. A skills demonstration will require the learner to complete a task or series of tasks that demonstrate a range of skills.

The assessor will devise an individual skills demonstration based on learning outcomes 7 -15. The learner must individually attempt the 20 tasks set out in the list below.

Learning outcome 7 will be assessed by a written exercise as part of the skills demonstration.

Weighting Factor:

Where a critical fault occurs the entire skills demonstration must be terminated.

Examples of critical faults: compromises safety, animal welfare, the environment

Examples of minor faults: Incorrect sequence, too slow, requires guidance

The learner must achieve at least half of the available marks in each task 1 to 20 listed below to pass this assessment with no more than two minor faults and no critical fault in any task.

Boom Sprayer Applicator (50%)

List of tasks:

Preparing boom sprayer for work

1 Carries out risk assessment for spraying

- Checks environmental conditions
- Assesses condition of primary vehicle (for non self-propelled equipment)
- Selects and wears appropriate personal protective equipment

2 Selecting Applicator

- Selects appropriate applicator
- Identifies components, their functions
- Checks sprayer before and after attaching to tractor (with access to checklists)
- Assesses compatibility of sprayer and tractor

3 Nozzles and Calibration

- Selects nozzles from nozzle chart;
- Calibrates static boom sprayer (with access to worksheet)
- calculates tractor forward speed (with access to worksheet)

4. Making up a pesticide spray mix

- Selects appropriate pesticide following Integrated Pest Management Principles

- Interprets pesticide label information for approved uses, risk and safety information and directions for use

5 Mixing

- Mixes chemical in accordance with good practice (Half fills tanks with clean water & sets agitator running, Measures pesticide accurately, adds correct dose and rinses containers; Tops up tank and washes off traces of chemical

6 Storing unused pesticide

- Returns pesticide to store (or temporary store) and completes Chemical Store Stock Record Chart and disposes of empty pesticide containers in a safe manner

7 Applying pesticide with a boom sprayer

- Marks out bouts/or uses tramlines
- Rolling starts
- Correct boom height
- Correct pressure and forward speed setting
- Checking wind speed and direction and starting spraying from downwind end
- Spraying 2 bouts, square turns, around perimeter leaving first headland unsprayed

8 Cleaning

- Carries out risk assessment for cleaning operation
- Rinses sprayer and sprays out first rinsings on unsprayed headland
- Washes through the lines and nozzles
- Disposal of rinsings in designated area
- Demonstrates the triple rinse method for rinsing used pesticide containers

9 Preparing boom sprayer and personal protective equipment for storage

- Cleans down external parts of sprayer in designated area
- Removes personal protective clothing in correct order
- Washes personal protective clothing
- Stores personal protective clothing
- Washes hands and exposed skin

10 Record keeping

- Completes sprayer operators Log
- Completes store log

Skills Demonstration

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Operating a slug pellet applicator with a primary vehicle (15%)

Prepares tractor and slug applicator for work

11 Carries out safety assessment for preparing tractor and spreader

- Assesses primary vehicle
- Interprets pesticide label information for approved uses, risk and safety information and directions for use
- Checks environmental conditions
- Selects and wears appropriate personal protective equipment
- Assesses compatibility of tractor with spreader
- Checks spreader for soundness
- Locates and greases all nipples

12 Calibrates the slug applicator

- Checks balance of spread
- Calibrates spreader for output
- Calibrates forward speed of tractor

13 Applies Slug pellets safely and accurately

- Carries out safety assessment for application of fertiliser
- Loads spreader with fertiliser
- Sets out bout markers
- Sets applicator height
- Applies bout around headland using boundary deflector
- Spreads pellets using parallel adjacent accurate bouts

14 Decontamination and prepares slug applicator for storage

- Washes spreader hopper, shutter mechanism and internal of spreader
- Washes tractor to remove traces of pellets

- Greases all nipples
- Coats metal parts of spreader with anti-corrosion product
- Checks all moving parts for damage
- Carries out safety assessment for preparation of spreader for storage
- Removes personal protective clothing in correct order
- Washes personal protective clothing
- Stores personal protective clothing
- Washes hands and exposed skin

Skills Demonstration

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Operating a Weed lick (15%)

15 Carries out safety assessment for preparing primary vehicle and weedlick

- Assesses condition of primary vehicle
- Assesses condition of weedlick
- Selects appropriate pesticide according to integrated pest management principles
- Interprets pesticide label information for approved uses, risk and safety information and directions for use
- Selects and wears appropriate personal protective equipment
- Assesses compatibility of all terrain vehicle with spreader
- Checks weedlick for soundness

16 Mixing

- Carries out risk assessment for dilution
- Calculates required volume to treat the area
- Mixes chemical in accordance with good practice (Half fills tanks with clean water Measures pesticide accurately, adds correct dose and rinses containers
- Tops up tank and washes off traces of chemical following the recommended mixing rate on the label

17 Pesticide Container Management

- Returns unused pesticide to chemical store / temporary store
- Completes Chemical Store Stock Record Chart
- Demonstrates triple rinsing used containers
- Disposes of empty pesticide containers in accordance with best practice

18 Weedlicker Operation

- Carries out risk assessment for operation
- Operates weedlicker as per manufacturer's instructions in accordance with recommended good practice
- Shuts off weedlicker before the end of treatment to ensure no excessive dripping from the wick
- Ensures that the wick is fully wet but not dripping during application

19 Preparing for storage

- Carries out risk assessment for cleaning and storage
- Allows wick to dry off before storage
- Empties residual mix and disposes in an appropriate manner
- Rinses pesticide tank
- Cleans outside of licker

20 Decontamination

- Removes personal protective clothing in correct order
- Washes personal protective clothing
- Stores personal protective clothing
- Washes hands and exposed skin
- Prepares personal protective equipment for storage and stores in a clean, dry ventilated locker; Washes hands & exposed skin
Completes Sprayer Operators Log

Examination - Theory

An examination provides a means of assessing a learner's ability to recall and apply knowledge, skills and understanding within a set period of time and under clearly specified conditions.

A theory-based examination assesses the ability to recall, apply and understand specific theory and knowledge.

The assessor will devise a theory-based examination to assess learning outcomes 1 - 6

Recognition of Prior Learning (RPL)	Learners may be assessed on the basis of their prior knowledge and experience. Providers must be specifically quality assured to assess learners by this means. To do so they must complete B10, see Provider's Quality Assurance Guidelines and be included on the Register of RPL approved providers. See RPL Guidelines at www.fetac.ie for further information and registration details.						
Grading	<table border="0"> <tr> <td>Pass</td> <td>50% - 64%</td> </tr> <tr> <td>Merit</td> <td>65% - 79%</td> </tr> <tr> <td>Distinction</td> <td>80% - 100%</td> </tr> </table>	Pass	50% - 64%	Merit	65% - 79%	Distinction	80% - 100%
Pass	50% - 64%						
Merit	65% - 79%						
Distinction	80% - 100%						
Specific Validation Requirements	<p>The provider must have the following in place to offer this award:</p> <ol style="list-style-type: none"> 1. Access to appropriate facilities and equipment to ensure compliance with health and safety for skills demonstration. 2. Single use Personal Protective Equipment where required following risk assessment 						
Supporting Documentation	<ol style="list-style-type: none"> 1. Publications and websites of The Health and Safety Authority of Ireland 2. Publications and websites of Department of Agriculture, Food and the Marine – Pesticide Control Service 						
Access	<p>To access programmes leading to this award the learner should have reached the standards of knowledge, skill and competence associated with the preceding level of the National Framework of Qualifications. This may have been achieved through a formal qualification or through relevant life and work experience.</p> <p>In order to access this award the learner must successfully complete a component award in Safe Use of Pesticide Products</p>						
Transfer	<p>Successful completion of this component award enables the learner to transfer to programmes leading to other certificates where this component is a mandatory or an elective requirement.</p>						

2. FET Award Standards

QQI award standards are determined within the National Framework of Qualifications (NFQ), <http://www.nfq-qqi.com>. QQI determines standards for the education and training awards that it makes itself and that are made by providers to whom it has delegated authority to make an award. Providers offering programmes leading to QQI awards **must** have their programme(s) validated in accordance with current validation policy (see www.qqi.ie).

Award standards are designed to be consistent with the NFQ's award classes i.e. major, special purpose, supplemental and minor awards. They are expressed in terms of **learning outcomes** i.e. concise statements of what the learner is expected to know or be able to do in order to

achieve a particular award. Learning outcomes for FET awards are contained within the associated specifications:

AWARD CLASS	STANDARDS	AWARDS
Major Award	Certificate Specification	Certificate (Levels 1 to 5) Advanced Certificate (Level 6)
Supplemental Award	Supplemental Specification	Supplemental Certificate (Level 3 to 6)
Special Purpose	Specific Purpose Specification	Specific Purpose Certificate (Levels 3 to 6)
Minor Award	Component Specification	Component Certificate (Levels 1 to 6)

Award standards are thresholds, they describe standards of knowledge, skill or competence to be acquired, and where appropriate, demonstrated, by a learner before an award may be made.

Award standards will be reviewed from time to time as necessary. Minor changes may be made by the QQI executive outside the review cycle where necessary. Changes to standards are published on QQI's website. Providers with validated programmes and providers with delegated authority to make awards are responsible for monitoring relevant standards and making necessary responses to changes.

3. FET Credit

Every FET certificate and component specification includes an FET credit value (Table 1). FET credit is quantified in multiples of 5 FET credits (up to 50 hours of learner effort). Learner effort is based on the time taken by typical learners at the level of the award to achieve the learning outcomes for the award. It includes all learning time involved including: guided learning hours, self-directed learning and assessment.

Table 1: FET Credit Values

NFQ Level	Major Awards Credit Values	Default Credit Values Minor Awards	Other Permitted Minor Award Credit Values	Special Purpose and Supplemental Award Credit Value Ranges
1	20	5	10	
2	30	5	10	
3	60	10	5,20	>5 and <60
4	90	10	5,15,20	>5 and <90
5	120	15	5,10,30	>5 and <120
6	120	15	5,10,30	>5 and <120

Guide to Level

Learning outcomes at this level include a broad range of skills that require some theoretical understanding. The outcomes may relate to engaging in a specific activity, with the capacity to use the instruments and techniques relating to an occupation. They are associated with work being undertaken independently, subject to general direction.

Strand	Sub-strand	Nature of learning
Knowledge	Breadth	Broad range of knowledge
	Kind	Some theoretical concepts and abstract thinking, with significant depth in some areas.
Know How & Skill	Range	Demonstrate a broad range of specialised skills and tools
	Selectivity	Evaluate and use information to plan and develop investigative strategies and to determine solutions to varied unfamiliar problems
Competence	Context	Act in a range of varied and specific contexts, taking responsibility for the nature and quality of outputs; identify and apply skill and knowledge to a wide variety of contexts
	Role	Exercise some initiative and independence in carrying out defined activities; join and function within multiple, complex and heterogeneous groups
	Learning to Learn	Learn to take responsibility for own learning within a managed environment
	Insight	Assume full responsibility for consistency of self- understanding and behaviour

Extract from 'Determinations for the Outline National Framework of Qualifications': NQAI