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NPTC LEVEL 2 AWARD IN THE SAFE USE OF PESTICIDES (QCF)

UNIT PA5 BOAT MOUNTED APPLICATORS

ASSESSMENT SCHEDULE

Unit PA 5 BOAT MOUNTED APPLICATORS

Either A Boom type – hydraulic nozzle or rotary atomiser
or B Granule applicator

Candidates undertaking assessment option B granule applicators will need also need to cover assessment criteria marked B.

Those completing one of the other options will be required to undergo further assessment to be certificated to use that type of equipment.

Due to the greater range of variables (e.g. the flow of water), it is not possible to calibrate boat mounted equipment as precisely as land based equipment.

There are a number of methods of calibration that candidates may use provided that it produces the correct end result.

Objective - Candidates will be able to:-

Prepare mounted pesticide application equipment for work, calibrate it and operate it without risk to themselves, other people and the environment.

Use the information detailed on product labels to determine the approved uses for the product and its potential hazards to human safety, non-target areas and the environment in general.

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Qualification and Credit Framework (QCF) – credit value

PA1 has a credit value of 2 credits on the QCF

Safe Practice

Operating the boat and/or the equipment in such a way as to put the candidate, assessor, equipment or the environment at risk will cause the candidate to be declared not yet competent

General water safety guidelines must also be followed throughout the assessment.

All equipment used must be of the standard required under current Health & Safety legislation.

Candidates must wear personal protective equipment (PPE) appropriate to the risk whenever carrying out work on the equipment.

Pre-requisites

The foundation unit (PA1) is required by candidates before being assessed for this application unit.

Validation of Equipment

A Any boom type hydraulic nozzle or rotary atomiser sprayer
B Any broadcaster type granule applicator.

Operator's instruction book and calibration charts/calculators should be available for use by the candidate throughout the assessment. Any other relevant literature may also be used.

Candidates who undertake this assessment and are judged 'competent' 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.

Site:

Work site with suitable sprayer filling/washing facilities which comply with current environmental best practice and an area to be sprayed.

Suggested facilities and equipment required to run the assessment:
Applicator and additional equipment appropriate to candidate and assessment option selected.
First Aid kit which compiles with the Health & Safety (First Aid) Regulation 1981.
Suitable boat matched to applicator.
Instruction books for boat and applicator.
Washing facilities.
Personal Protective Equipment to comply with pesticide label/COSHH risk assessment including life jacket.
Steel tape measure (2m).
Tape measure/Measuring wheel to measure 100m run.
Suitable tools.
Spare nozzles, filters etc.
Clean product labels appropriate to the candidate.
Clean water supply and pipe work.
Accurate and suitable measuring jugs
Measuring cylinder
Appropriate containers with pesticide or simulated pesticide.
Area of water for site work.
Pocket calculator.
Wind speed gauge.
Nozzle selection literature.
Suitable lubricants.
Appropriate container to collect granules during calibration (granule applicators only).
Appropriate Application Record Sheets

Assessment Activity	Assessment Criteria
Preparation	
1. Identify applicator controls and components	- Pump - Pulsation damper - Filling control and devices - Agitation control - Pressure or volume regulator/pressure relief valve - On/off - Boom isolators - Tank wash system - Tank, filters, pump, pressure gauge, nozzles and other items specific to the applicator - Controls - Valve positions - Boom pressure compensation
	OR
Demonstrate knowledge of liquid flow, action of applicator (B) in filling, applicationand circulation modes. (B)	- Metering mechanism on/off - Drive to distribution mechanism on/off
Remove, clean and replace a filter	- Candidate to explain liquid flow of the machine being used
Demonstrate knowledge of nozzles	- Suitable procedure - Contain spillage - Check for defects - Types of nozzle and their uses • Flat fan. Standard boom nozzle • Air inclusion. Medium/coarse spray, reduces drift • Cone. Good coverage for fungicides and insecticides
2. Demonstrate knowledge of safe handling of the boat	- Even loading - Safe, secure mooring when transferring pesticides and equipment - Use of life jacket - No equipment on operator's back when operating from the boat - Extra person present at all times
Demonstrate knowledge of legal requirements and safety legislation	- Be aware of any safety implications imposed by Risk Assessment on the machine and the operation and comply with their requirements - Ensure that all required guards are in place and in good condition - Comply with the Code of Practice
3. Demonstrate knowledge of the principles of application in or near water	- Any areas, which include drainage channels, streams, rivers, ponds, lakes, reservoirs, canals and dry ditches and the banks or areas immediately adjacent - Seek Environmental Agency approval - Ensure pesticide is approved for aquatic use - Assess the risk of contamination downstream, e.g. water extraction, sensitive sites and livestock - Appropriate operator certification - Water extraction - Sensitive sites - Livestock drinking and grazing - De-oxygenation of water - Removal of fish cover - Domestic water

Assessment Activity	Assessment Criteria
4. Check for mechanical defects (B) (B) (B) (B) Check security of attachment of application mechanisms. Demonstrate knowledge of lubrication of components (B)	- Seized, worn or damaged components - Atomiser drives, electrical connections - Drive system - Fan blades - Air supply unimpeded - Condition and tension of belts - Bolts tight - Straps adjusted - All linkage secure - Even weight distribution - Identify all lubrication points by using the instruction book - Components that should not be lubricated
5. Prepare the boat for application	- Suitable for the situation - Accessibility of the boat controls - Accessibility of the applicator controls
6. Demonstrate working knowledge of the functions of the control panel Demonstrate knowledge of action to be taken if system fails	- Malfunction warning lights - Program application parameters into micro processor - Switch to test mode/manual for calibration checks - Check LED readouts for forward speed, rate applied, area covered. - Check tank contents against area covered - Stop pesticide application - Convert to manual if possible - Ensure forward speed and nozzle output are correct - If manual control is not possible, report fault according to standard work place procedure
7. Read and interpret product label (as supplied or approved by the assessor) Select application rate/ volume/ spray quality. Measure/estimate average depth of water (B) (B) (B) Measure flow rate of water (if appropriate)	- Field of use - PPE requirements - Product being used - Crop/target on which product may be used - Specific product precautions - Appropriate for type of applicator - Dose rate - Volume rate - Maximum number of treatments - Timing - Additional label information - Restrictions on use - Use of adjuvants - Recommended nozzles - Recommended spray quality/drop size - Risk of drift - Target - Weed canopy density - Reduced volume application - Lower and upper limits - Work rates (timeliness) - Effects of depth of water on application rate - Variation from near banks to centre - Average across whole width - Accurate measurement

Assessment Activity	Assessment Criteria
8. Part fill applicator.	- Suitable site selected - Fill by usual on site method following approved safe procedures. - Clean water supply
9. Check boom suspension and break- back devices (if applicable)	- Boom suspension - Height adjustment - Break-back efficiency - Boom folding - Avoiding contamination from booms - Proximity to overhead lines - Boom stowage
10. Select and calculate speed.	- Acceptable speed range conducive with safety, work rates and water flow - Accurate measurement of 100m - Time in seconds to cover 100m. - Correct use of formula
Demonstrate knowledge of factors affecting consistency of boat speed and the need to constantly monitor application rate	- Wind speed - Flow of stream - Travelling with or against the flow - Weed obstructions
Calculate required output.	- Correct use of formula
Select appropriate nozzle/atomiser and pressure/disc speed.	- Use of operator's handbook - Nozzle/atomiser manufacturer's literature
Machine setting (B)	- Use of operator's handbook
11. Check applicator for leaks and spray patterns (if applicable) .	- Use higher than normal system pressure - Visual check of all nozzles/atomisers for even spray pattern with no blockages, streaking or pulsing and correct alignment. - Replace defective nozzles/atomisers - Lid and seals - Hoses and pipe work - Air leaks - Control valves - Pressure gauge
Check anti drip system.	- Check valves
Demonstrate procedure for replacing blocked nozzles.	- Replace nozzles according to manufacturer's instructions - Replacements from spare nozzles stored in a clean container

<table>
<tr><th>Assessment Activity</th><th>Assessment Criteria</th></tr>
<tr><td>12. Set operating pressure/machine setting

Check nozzle/atomiser outputs .

Or

Collect and weigh product (B)

Demonstrate knowledge of calibration data to be recorded

(B)
(B)
(B)</td><td>- As determined by nozzle chart
- Pressurize appropriate to the system
- Using a measuring jug measure output from four nozzles/atomisers (at least one from each boom section) and compare with target output.
- Vary pressure to make small adjustments only / change nozzles.
- Or any other acceptable method.

Or
- Correct height of applicator
- Safe practice throughout

- Boat identification
- Throttle setting (boat)
- Throttle setting (applicator)
- Nozzle/atomiser
- Application volume
- Pressure/disc speed
- Nozzle/atomiser output
- Additives used
- Flow rate of water (Target)
- Applying with or against flow
- Machine settings used
- Height of discharge point</td></tr>
<tr><td colspan="2">Site Work</td></tr>
<tr><td>13. Calculate, measure and mix pesticide, part filling tank / hopper, adding pesticide to tank/hopper safely and fill to the required level</td><td>- Suitable site
- Determine the size of the area/volume to be treated
- Correct dose rate
- Calculate appropriate quantities for full and part tank/hopper loads
- Accurate measurement of pesticide
- Use of filling device where fitted.
- Avoidance of spillage
- Correct filling procedure
- Observance of pesticide manufacturer's instructions for mixing, agitation, tank mixes.
- Availability and correct use of water supply.</td></tr>
<tr><td>14. Demonstrate knowledge of the preparation of concentrated pesticides</td><td>Suspensions/Emulsions
- Shake container thoroughly before use
- Thorough agitation while mixing and during application

Wettable powders
- Premix the required amount of powder into a paste with a small amount of water.
- Bulk up by mixing with more water
- Add to the applicator
- Wash out mixing container into applicator
- Top up applicator to volume of water required

Dispersible powders/granules
- Mix required amount of granules with small amount of water
- Ensure granules dissolved/dispersed
- Add to half full applicator tank
- Top up applicator to volume of water required.

Soluble packages
- Ensure dry storage
- Handle with dry gloves
- Put into applicator
- Agitate
- Top up to required volume of water</td></tr>
</table>

Assessment Activity	Assessment Criteria
15. Carry out an environmental risk assessment of the application site	May include: - Water courses - Drains - Aquatic life - Wildlife - Flowering plants - Public access - Sensitive crops/areas - Hedgerows - Housing - Factors particular to the site - Wind speed gauge at suitable height or visible signs - Wind direction - Check and maintain application rate - Other environmental margins - Warn neighbours - Use an appropriate pesticide - Careful timing of application - Avoid overspraying banks/hedgerows - Comply with environmental assessment - Avoid spray drift - Warning signs - Weather conditions - Direction of spraying - Nozzle size and type - Nozzle pressure/disc speed - Balancing flow rate and atomiser speed - Boat speed - Boom height (B) - Effect of wind speed on distribution pattern (B) - Evenness of spread (B) - Height of spreading mechanism (B) - Trim of boat
Clean and decontaminate	
16. Demonstrate knowledge of safe and accurate application procedures on site	Methods of marking may include: - Blob markers - Marker poles - Carefully avoid contact with the contaminated area, - Mark the spot at which the tank emptied, either by a marker pole in the water or on the bank. - Continue applying by accurately matching at the appropriate point

Post Operation

Assessment Activity	- Assessment Criteria
17. Apply to a given area in a safe and appropriate manner.	- Ensure boom/applicator is level or aligned to target. - Boom height according to target and type of nozzle/nozzle angle. - Operate controls to start and finish applying accurately at beginning and end of each bout. - Correct forward speed and pressure in relation to site conditions. - Accurate matching of bouts. - Coping with obstacles - All area treated/minimising overlaps and misses. - Applying upstream where possible - Awareness of changes in wind speed and direction.
(B)	- Correct height of applicator
18. Demonstrate knowledge of correct procedures for spraying surface vegetation	- Avoid freshly sprayed vegetation (submerges weed and washes off pesticide) - Avoid spraying onto wet leaves (dilutes pesticide)
19. Demonstrate knowledge of: a) cleaning and decontamination of the applicator	- Appropriate site. - Thorough washing with water and suitable additive if recommended. - Internal and external surfaces. - Use of in-built systems when provided. - Safe disposal of tank washings by approved methods. - Thorough flushing of systems. - When cleaning should take place. - Safe procedures followed. - Safe disposal of surplus dilute pesticide
b) procedures to protect the environment and the operator before undertaking repairs or replacement of parts	- Select an appropriate containment site and possible containers for contaminated material. - Ensure that the applicator is made safe (engine stopped, supports if appropriate). - Safely isolate, - Drain and thoroughly decontaminate area or part to be replaced or repaired - Move away from wash site before repairs undertaken
c) preparation of applicator for storage	- Ensure the applicator is clean and dry. - Inspect for wear and/or damage, - Replace any worn or damaged parts. - Ensure system is drained and all valves left in appropriate positions - If appropriate, draw antifreeze through system, particularly the pump. - Remove filters and nozzles and store appropriately. - Lubricate as required - Store under cover and out of direct sunlight - Store in a secure area
20. Complete application record	- Records completed. - Accurate recording.