



Australian Government

Department of Education, Employment and Workplace Relations

SFIAQUA209C Manipulate stock culture environment

Release: 1

SFIAQUA209C Manipulate stock culture environment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency involves manipulating the stock culture or holding environment to optimise growing or holding conditions on an aquaculture or ornamental facility. It covers interpreting instructions, using basic equipment appropriately and recording results and observations. Monitoring of stock and environmental conditions is covered in SFIAQUA213C Monitor stock and environmental conditions. Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking.
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Application of the Unit

Application of the unit	Licences may be required if operating: • load-shifting equipment, including forklifts • vehicles • vessels. All enterprise or workplace procedures and activities are carried out according to relevant government regulations, licensing and other compliance requirements, including occupational health and safety (OHS) guidelines and ecologically sustainable development (ESD) principles. Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate personal protective equipment (PPE) is selected, checked, used and maintained.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for manipulation of culture or holding environment	1.1. Options for manipulating culture or holding environment and contingency plans are confirmed with supervisor. 1.2. Required water treatment equipment is collected and checked for serviceability, repaired and calibrated if necessary. 1.3. Water treatment equipment is moved to site, positioned in relation to culture or holding structure and readied for use. 1.4. Water and weather conditions are observed and conditions which could adversely impact on the wellbeing of stock are reported to supervisor.
2. Manipulate culture or holding environment	2.1. Water treatment equipment is operated correctly. 2.2. Stock holding structures or culture environments are adjusted to suit stock. 2.3. Basic water quality and environmental factors are re-checked and noted against requirements for stock. 2.4. Stock behaviour is observed and abnormal activity reported to supervisor. 2.5. Work practices are employed to minimise stock stress or damage. 2.6. Automatic or mechanised equipment is operated and maintained.
3. Complete post-environment manipulation activities	3.1. Clean up of work area, including repairs and storage of equipment, is supervised, and condition report prepared. 3.2. Relevant environment manipulation data, observations or information are recorded legibly and accurately, and any out of range or unusual records checked. 3.3. Compliance and other required reports are prepared and conveyed to senior personnel advising of the effectiveness of environment manipulation, and recommendations made for improvements. 3.4. Feedback on own work performance is sought from supervisor and opportunities to improve identified.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communicating with supervisor on options for manipulating the culture environment and contingency plans
- communicating ideas on possible improvements
- operating and calibrating water treatment equipment
- providing oral reports and written records to supervisor on operation effectiveness and any irregularities
- recognising normal and gross abnormal stock behaviour.

Literacy skills used for:

- interpreting workplace documents and equipment according to manufacturer guidelines
- recording contingency plans and water treatment options used.

Numeracy skills used for:

- basic calculations used in altering culture environment
- reading machines, meters or test kits when making adjustments to culture environment or calibrating equipment.

Required knowledge

- basic water quality tests to be undertaken
- effects of farm wastes/effluent on environment
- effects of water and weather conditions on stock and OHS of employees
- methods for culture environment manipulation
- normal and abnormal stock behaviour
- operation and maintenance of automatic or mechanised equipment
- options for manipulating the culture environment
- significance of basic water quality factors and environmental (e.g. weather) factors on stock health and wellbeing
- water treatment equipment maintenance and repairs
- water treatment equipment operating methods.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment evidence required to demonstrate competence in this unit

Assessment must confirm the ability to:

- manipulate the environment within the stock culture or holding structure according to supervisor instructions and enterprise procedures, and ensure stock are reared in optimal conditions.

Assessment must confirm knowledge of:

- calibrating, testing and monitoring procedures
- obvious signs of ill health or abnormal behaviour in stock
- water quality and environmental factors that can affect stock
- water treatment equipment operation consistent with work procedures and manufacturer guidelines.

Context of and specific resources for assessment

Assessment is to be conducted at the workplace or in a simulated work environment. It is best assessed over a period of time so that adjustments are made in response to a range of water quality and environmental factors typically impacting on aquaculture enterprises in the region.

Resources may include:

- culture species environmental requirements and water quality factors
- culture structures with/in water containing stock
- data sheets for recording information on adjustments to culture environments
- water treatment equipment, enterprise procedures and manufacturer guidelines for operation
- work procedures for manipulating stock culture environment.

Method of assessment

The following assessment methods are suggested:

EVIDENCE GUIDE	
	• demonstration • practical exercises • project work • written or oral short-answer testing.
Guidance information for assessment	This unit may be assessed holistically with other units within a qualification.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
<i>Relevant government regulations, licensing and other compliance requirements</i> may include:	• biosecurity, translocation and quarantine • environmental hazard identification, risk assessment and control • health and welfare of aquatic animals • safety at sea and pollution control • OHS hazard identification, risk assessment and control.
<i>OHS guidelines</i> may include:	• appropriate workplace provision of first aid kits and fire extinguishers • codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector • enterprise-specific OHS procedures, policies or standards • hazard and risk assessment of workplace, maintenance activities and control measures • induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner • OHS training register • safe lifting, carrying and handling techniques,

RANGE STATEMENT	
	including manual handling, and the handling and storage of hazardous substances • safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace • systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts • the appropriate use, maintenance and storage of PPE.
ESD principles may include:	• applying animal welfare ethics and procedures • control of effluents, chemical residues, contaminants, wastes and pollution • control of weeds, pests, predators and diseases, and stock health maintenance • improving energy efficiency • increasing use of renewable, recyclable and recoverable resources • minimising noise, dust, light or odour emissions • preventing live cultured or held organisms from escaping into environment • reducing emissions of greenhouse gases • reducing energy use • reducing use of non-renewable resources • undertaking environmental hazard identification, risk assessment and control • undertaking facility quarantine, biosecurity and translocation of livestock and genetic material • using and recycling of water, and maintaining water quality.
PPE may include:	• buoyancy vest or personal floatation device (PFD) • hard hat or protective head covering • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective outdoor clothing for tropical conditions

RANGE STATEMENT	
	• safety harness • sun protection (e.g. sun hat, sunscreen and sunglasses) • uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons) • waterproof clothing (e.g. wet weather gear and waders).
<i>Culture or holding environment</i> may include:	• associated equipment or systems, such as: • blowers, aerators, paddlewheels and aspirators • greenhouses, hothouses and igloos • pest, predator and disease control structures • water supply and disposal or effluent systems, including pumps, pipes, canals, channels, settlement ponds and storage dams • cages, pontoons, enclosures and pens, including associated moorings, anchors and markers • dams, ponds and pools • display tanks, aquaria and aquascapes • grow out facilities, hatcheries and nurseries • harvesting swimways, canals or channels • live holding tanks, bins, cages and pens • longlines, posts, racks and rails, rafts, fences, socks, trays, sticks, baskets, modules, barrels, bags and panels • open, flow-through, closed and semi-closed systems • purging or depurating systems • tanks, raceways and recirculating systems.
<i>Options</i> may include:	• change water flow rates and exchange water • drain and dry out floor • lower stock density or harvest stock • reduce feeding • remove wastes • move stock or culture structure to new location • rake sediments • treat incoming or culture water: • aeration • dissolved oxygen

RANGE STATEMENT	
	• fertilisers and chemicals • filtration • hardness • pH • salinity • temperature • turbidity.
Contingency plans may include:	• changing weather conditions • contaminants or pollutants • equipment failures or damage • pest, predator or disease infestations • power failure • stock escapes • stock mortalities.
Water treatment equipment may include:	• activated carbon • aerators, aspirators and airlifts • chlorine or other chemicals • fertiliser or lime spreaders • filtration: • mechanical • biofilter • chemical • foam fractionator • pasteurisation • pumps, siphons, blowers and fans • ultraviolet (UV) or ozone sterilisation.
Repaired may include:	• change of test chemicals and solutions • cleaning or replacement of probes • replacement of cables.
Stock may include:	• adults, broodstock (ready to breed), seedstock or stockers, eggs and sperm, fertilised eggs, larvae, post-larvae, seed, spat, hatchlings, yearlings, juveniles, fry, fingerlings, yearlings, smolt, sporophytes, seedlings and tissue cultures • finfish, crustaceans, molluscs, aquatic reptiles, amphibians, polychaete and oligochaete worms, plankton, micro-algae, seaweed, aquatic plants, live rock, sponges and other aquatic invertebrates

RANGE STATEMENT	
	• for human consumption (seafood), stockers for other farms, stockers for conservation or recreational fishing, display or companion animals (ornamentals), and other products, including pearls, skins, shells, eggs, chemicals and pigments • wild caught, hatchery or nursery reared.
Basic water quality factors may include:	• alkalinity • ammonia nitrites • carbon dioxide • dissolved oxygen • hardness • nitrate and other nitrogenous products • pH • salinity or conductivity • temperature • turbidity.
Environmental factors may include:	• activity of pests and predators • climatic conditions (e.g. rainfall, amount of cloud cover, and wind direction and speed) • contaminants • light • natural foods • tidal or water flow direction and speed • wave size and direction.
Stock behaviour may include:	• aggression or cannibalism • colour changes • feeding • piping, darting, flashing or whirling movement • reproduction or courtship • schooling or individuals • swimming.

Unit Sector(s)

Unit sector	Aquaculture operations
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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