



Australian Government

Department of Education, Employment and Workplace Relations

SFIAQUA501C Develop a stock nutrition program

Release: 1

SFIAQUA501C Develop a stock nutrition program

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	<p>This unit of competency involves developing and improving a stock nutrition program for an aquacultural or ornamental enterprise.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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Application of the Unit

Application of the unit	<p>This unit has application for aquaculture culture and holding environments that rely in full or in part on formulated feeds.</p> <p>A stock nutrition program is closely associated with the enterprise production plan and stock health program.</p> <p>All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>.</p> <p>Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained.</p>
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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. Plan a stock nutrition program	<p>1.1. Nutritional requirements (daily and seasonal) of cultured or held stock are determined from published data on species, research programs, historical records, industry practice and enterprise procedures.</p> <p>1.2. Mechanisation or automation of process or activity, including the use of specialised contract services, is researched and benefits identified.</p> <p>1.3. Plan is developed to ensure adequate nutrition is provided to achieve appropriate stock condition in line with the enterprise production plan.</p> <p>1.4. Plan responds to different nutrition requirements during a range of conditions over the growing cycle of the stock.</p> <p>1.5. The most cost-effective approach to applying the required nutrients is determined.</p> <p>1.6. Selected foods in the nutrition plan are researched to identify and minimise risk of adverse side effects on stock or stock culture or holding environment.</p> <p>1.7. Nutrition plan is documented and communicated to supervisors and management.</p>
2. Monitor and improve the stock nutrition program	<p>2.1. Implementation of the program is monitored by stock testing to ensure requirements of the enterprise production plan are achieved.</p> <p>2.2. Nutrition program is reviewed and monitored to ensure it remains responsive to changing conditions.</p> <p>2.3. New feeds or formulations are tested and introduced into nutrition program, if suitable.</p> <p>2.4. Appropriate courses of action are implemented to alleviate or overcome identified shortcomings in the program.</p> <p>2.5. Remedial action undertaken is documented and reported to management.</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

REQUIRED SKILLS AND KNOWLEDGE**Required skills**

- analysing data as the basis for making improvements to the stock nutrition program
- conveying information on nutrition program to personnel for implementation
- monitoring the stock nutrition program
- planning skills to develop a nutrition program
- testing feeds, water and stock
- researching nutritional information and mechanisation or automation options for feeding and monitoring
- reporting on remedial actions to management.

Literacy skills used for:

- documenting programs
- reading and interpreting enterprise production plan
- reading and researching technical literature
- recording information
- writing and presenting reports.

Numeracy skills used for:

- analysing the cost-effectiveness of the stock nutrition program
- statistical analysis of data in nutrition or feeding trials.

Required knowledge

- feeding behaviour of stock
- feed delivery methods
- feed preparation
- feeding strategy
- macro and micro-elements
- nutrient cycling
- nutriment deficiency or toxicity symptoms
- nutritional requirements of specific stock
- nutriment uptake by stock
- relationship between environmental and water conditions and nutriment availability to stock
- mechanisation or automation of process or activity
- sources of stock nutriment
- use of specialised contract services.

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
Overview of assessment	
Critical aspects for assessment evidence required to demonstrate competence in this unit	<p>Assessment must confirm the ability to:</p> <ul style="list-style-type: none"> develop a cost-effective stock nutrition program for cultured or held stock that takes into account the stock nutritional requirements under a range of conditions, the enterprise production plan and ESD principles. <p>Assessment must confirm knowledge of:</p> <ul style="list-style-type: none"> feeding strategy feed delivery methods feeding behaviour feed preparation macro and micro-elements nutrient cycling nutriment deficiency or toxicity symptoms nutritional requirements of specific stock nutriment uptake by stock relationship between water characteristics and nutrient availability to stock sources of stock nutriment.
Context of and specific resources for assessment	<p>Assessment is to be conducted at the workplace or in a simulated work environment. To assess a stock nutrition program as cost-effective and meeting stock requirements under a range of conditions, the assessment period should be over at least one (1) full production cycle.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> research material relating to stock nutrition.
Method of assessment	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> case study analysis practical exercises

EVIDENCE GUIDE	
	<ul style="list-style-type: none"> • project (work or scenario based) • 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	
<p>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.</p>	
<p><i>Relevant government regulations, licensing and other compliance requirements</i> may include:</p>	<ul style="list-style-type: none"> • ESD principles, environmental hazard identification, risk assessment and control • aquaculture regulations, permits, licences, quotas, catch restrictions and other compliance requirements, including international treaties and agreements • imports quarantine and inspection, and importing approved arrangements for Australian Quarantine Inspection Service (AQIS), Australian Customs Service (ACS) and Biosecurity Australia (BA) • Indigenous native title, land claims and cultural activities, including fishing by traditional methods • maritime and occupational diving operations: <ul style="list-style-type: none"> • foreign and Australian legislation applying to quarantine and customs • International Convention for the Safety of Life at Sea (SOLAS) • International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 1978) • Marine Emergency Response Search and Rescue (MERSAR) • National Standards for Commercial Vessels

RANGE STATEMENT	
	<ul style="list-style-type: none"> • pollution prevention - International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) • Uniform Shipping Laws (USL) Code • use of vessels, right of way and other marine orders, bunkering and refuelling • land, buildings and vehicles: <ul style="list-style-type: none"> • buildings and structures design and appearance, constructions and additions • poaching, trespass and theft • road laws for use of motor vehicles, bikes, trucks and other transport equipment • soil and water management • use of chemicals and biological agents • use of firearms and powerheads • use of utilities, including water, natural gas, electricity and sewage • water or land lease, tenure or ownership and use • OHS hazard identification, risk assessment and control • product quality assurance: <ul style="list-style-type: none"> • correct naming and labelling (e.g. country of origin, Australian Fish Names Standard and eco-labelling) • correct quantities, sizes and other customer requirements • third-party certification (e.g. Australian Grown and ISO 14001:2004 Environmental management systems).
<i>OHS guidelines</i> may include:	<ul style="list-style-type: none"> • appropriate workplace provision of first aid kits and fire extinguishers • clean, uncluttered, hygienic workplace • 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

RANGE STATEMENT	
	<p>requirements to allow them to carry out their duties in a safe manner</p> <ul style="list-style-type: none"> • OHS training register • safe lifting, carrying and handling techniques, 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.
<i>ESD principles</i> may include:	<ul style="list-style-type: none"> • controlling use and recycling of water, and managing water quality and quantity • increasing use of renewable, recyclable and recoverable resources • managing environmental hazard identification, risk assessment and control • managing stock health and welfare, especially for handling, holding, transport and slaughter • managing, controlling and treating effluents, chemical residues, contaminants, wastes and pollution • minimising noise, dust, light or odour emissions • planning environmental and resource efficiency improvements • preventing genetically modified and live cultured or held organisms from escaping into environment • protecting native and protected flora and fauna, marine or land parks or areas, adhering to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Ramsar Convention, World Heritage and other international treaties for which Australia is a signatory • reducing emissions of greenhouse gases • reducing use of non-renewable resources

RANGE STATEMENT	
	<ul style="list-style-type: none"> • reducing disturbances to soils, erosion and surface water flows from machinery use and other activities • reducing energy use and introducing alternative energy sources.
<i>PPE</i> may include:	<ul style="list-style-type: none"> • buoyancy vest or personal floatation device (PFD) • gloves, mitts or gauntlets, and protective hand and arm covering • hard hat or protective head covering • hearing protection (e.g. ear plugs and ear muffs) • insulated protective clothing for freezers or chillers and refrigeration units • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective eyewear, glasses and face mask • protective hair, beard and boot covers • protective outdoor clothing for tropical conditions • respirator or face mask • 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>Cultured or held stock</i> may include:	<ul style="list-style-type: none"> • 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 • for human consumption (seafood), stockers for other farms, stockers for conservation or

RANGE STATEMENT	
	<p>recreational fishing, display or companion animals (ornamentals), and other products, including pearls, skins, shells, eggs, chemicals and pigments</p> <ul style="list-style-type: none"> • wild caught, hatchery or nursery reared.
Benefits may include:	<ul style="list-style-type: none"> • environmental, which may result from: <ul style="list-style-type: none"> • better control of water quality variables within acceptable range • less contaminants • multi-purpose facilities, such as polyculture, aquaponics and hydroponics • reduced waste to remove or treat • reduced expenses, which may result from: <ul style="list-style-type: none"> • improved food conversion in stock • less manipulation of water quality variables or stock culture or holding structures • less waste to be treated or removed • more efficient energy use • reduced labour requirement for feeding activities.
Stock condition may include:	<ul style="list-style-type: none"> • colour • fullness • general appearance • maturation condition • meat yield • shape • size • weight.
Range of conditions may include:	<ul style="list-style-type: none"> • disease or parasite infestation • feeding history • life cycle phase • pest activity • predator activity • seasonal influences • stock density • time of day • water flow or water management practices • water quality characteristics • weather, climate.

RANGE STATEMENT	
Approach may include:	<ul style="list-style-type: none"> • augmentation (fertilisation) of culture water to increase food levels • feed delivery and feeding behaviour • provision of formulated or supplementary feeds • provision of live or cultured feeds • selection of sites for extensive (natural) feeding.
Stock culture or holding environment may include:	<ul style="list-style-type: none"> • closed (recirculation) systems • open • semi-closed.
Stock testing may include:	<ul style="list-style-type: none"> • condition factor • dissections • food conversion ratios • general appearance • growth rates • nutritional profile of carcass or meat • on site or off site • proximate analysis of carcass, meat and yield.
Remedial action may include adjustments to:	<ul style="list-style-type: none"> • feed delivery • feed scheduling • ingredients or formulations • stocking densities • water management practices.

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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