

**Federal Democratic Republic of Ethiopia**  
**OCCUPATIONAL STANDARD**  
**FISHERY AND AQUACULTURE**  
**NTQF Level II-IV**



*Ministry of Labour and Skill*

*July 2022*

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## Introduction

Ethiopia has embarked on a process of reforming its TVT-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVT is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVT system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVT-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements & expected outcome related to a specific occupation without taking TVT delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit Title describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance Criteria
- Variables and Range
- Evidence guide

Together all the parts of a Unit Title guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit Title

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and the Unit Titles
- contents of each Unit Title(competence standard)
- Occupational map providing the technical and vocational education and training (TVT) providers with information and important requirements to consider when designing training programs for this standard and for the individual, a career path.

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## UNIT OF COMPETENCE CHART

Occupational Standard: Fishery and Aquaculture		
Occupational Code: AGR FAQ2		
<b>NTQF Level II</b>		
<a href="#"><u>AGR FAQ2 01 0722</u></a> Perform Fishing 1	<a href="#"><u>AGR FAQ2 02 0722</u></a> Make and mend fishing net 3	<a href="#"><u>AGR FAQ2 03 0722</u></a> Perform fish feeding 2
<a href="#"><u>AGR FAQ2 04 0722</u></a> Perform Fish harvesting 5	<a href="#"><u>AGR FAQ2 05 0722</u></a> Apply Emergency Procedures 4	<a href="#"><u>AGR FAQ2 06 0722</u></a> Perform fish gutting and filleting 6
<a href="#"><u>AGR FAQ2 07 0722</u></a> Implement Agribusiness Marketing 8	<a href="#"><u>AGR FAQ2 08 0722</u></a> Apply Basics of Human Nutrition Practices 9	<a href="#"><u>AGR FAQ2 09 0722</u></a> Apply 5S Procedures 7

**Occupational Standard: Fishery and Aquaculture**

**Occupational Code: AGR FAQ3**

**NTQF Level III**

**[AGR FAQ3 01 0722](#)**

Maintain water quality

**[AGR FAQ3 02 0722](#)**

Establish fish farm

**[AGR FAQ3 03 0722](#)**

Process and utilize fish  
by- products

**[AGR FAQ3 04 0722](#)**

Apply aquaculture bio-  
security measures

**[AGR FAQ3 05 0722](#)**

Perform post harvest  
handling

**[AGRFAQ3 06 0722](#)**

Produce algal and live-  
feed cultures

**[AGR FAQ3 07 0322](#)**

Apply Agricultural  
Extension service for rural  
development

**[AGR FAQ3 08 0322](#)**

Apply Digital Technology  
in Agriculture

**[AGR FAQ3 09 0322](#)**

Prevent and Eliminate  
MUDA

**Occupational Standard: Fishery and Aquaculture**

**Occupational Code: AGR FAQ4**

**NTQF Level IV**

**[AGR FAQ4 01 0722](#)**

Establish integrated fish farm

**[AGR FAQ4 02 0722](#)**

Operate fish nursery pond

**[AGR FAQ4 03 0722](#)**

Conduct Hatchery Management

**[AGR FAQ4 04 0722](#)**

Monitor and Manage Fishery Resources

**[AGR FAQ4 05 0722](#)**

Conduct waste disposal and management

**[AGR FAQ4 06 0722](#)**

Manage Fish Farm

**[AGR FAQ4 07 0722](#)**

Develop value chain analysis

# Level II

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Occupational Standard: Fishery and aquaculture Level II	
Unit Title	Perform Fishing
Unit code	<a href="#">AGR FAQ 2 01 0722</a>
Unit descriptor	This unit covers the skills, knowledge and attitude required to adjust and position fishing gears and catch fish from water body.

Element	Performance Criteria
1. Understand Biology and behavior of fish	<p>1.1 Basic information on anatomy and physiology of fish is identified and understood</p> <p>1.2 Reproduction pattern of fish are understood</p> <p>1.3 Fish habitats and common species are understood and identified</p>
2. Prepare for fishing activities	<p>2.1 <i>Fishing tools, equipment and materials</i> are identified and organized.</p> <p>2.2 Occupational health and safety(OHS) procedures and safe working practice are applied including the selection of <i>persona protective equipment (PPE)</i></p> <p>2.3 Unsafe and inefficient aspects of the work area are identified and rectified.</p> <p>2.4 Clear instructions are provided to all crew covering the task and the methods to be used.</p>
3. Assess and Adjust fishing gears	<p>3.1. The performance of <i>fishing gears</i> is assessed according to the national and organizational standard.</p> <p>3.2. Measurements are made of <i>fishing gears components</i> to confirm symmetry.</p> <p>3.3. Effectiveness of deployment of fishing gears components is assessed by comparing observed operation of components with gear plans.</p> <p>3.4. Fishing gears components are adjusted, reconditioned or constructed to rectify gear performance according to the</p>

	industry standard.
4. Position fish gears to optimize catch	<p>4.1 Fishing gears are set on the water body according to the working guideline of the industry</p> <p>4.2 Catches are analyzed to determine the effectiveness of beach seines, mesh nets or gill nets.</p> <p>4.3 Position of fish gears is monitored and altered when necessary to optimize the catch.</p> <p>4.4 Boat position during the deployment and retrieval of fishing gear is monitored for the factors that contribute to a successful fishing activity and altered as required.</p>
5. Work as a team member	<p>5.1. Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives</p> <p>5.2. Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and workplace context</p> <p>5.3. Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members</p>
5. Collect the caught fish	<p>5.1. Fishes are collected from the fishing nets and hooks</p> <p>5.2. Sorting of undersized and by catch fish from the catch and return back to water immediately are performed</p> <p>5.3. Handling of caught fishes are performed according to organizational procedures and standards</p>
6. Complete fishing activities	<p>6.1. <b>Waste material</b> produced during fishing is handled according to rules and regulations</p> <p>6.2. Materials, tools and equipment are handled and transported according to supervisor instructions and industry guidelines.</p> <p>6.3. Materials are returned to store or disposed of according to</p>



	<p>supervisor instructions.</p> <p>6.4. Tools and equipment are cleaned, maintained and stored according to manufacturer specifications and supervisor instructions.</p> <p>6.5 Work outcomes and difficulties in completing work are reported to supervisor, feedback on performance is sought and any required improvements are noted for future action.</p>
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Variable	Range
Fishing tools, equipment and materials	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fishing Rod and Reel</li> <li>• Long Line hooks</li> <li>• Bait</li> <li>• Lures</li> <li>• Bobbers/ Floater</li> <li>• Sinkers</li> <li>• Swivels</li> <li>• Fish net</li> <li>• Inboard and out board boat</li> <li>• Fish container</li> </ul>
Personal protective equipment (PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fishing First Aid Kit.</li> <li>• Sunscreen.</li> <li>• Rainwear.</li> <li>• Sunglasses.</li> <li>• Personal Flootation Devices (PFDS)</li> <li>• Hip Boots</li> <li>• Waders.</li> <li>• Life saver Jackets</li> <li>• Gloves</li> </ul>

	<ul style="list-style-type: none"> <li>• Safety goggles</li> <li>• Plastic boots/shoes</li> <li>• Sunhats</li> <li>• Nose protector</li> <li>• Helmet</li> </ul>
Fishing gears	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Beach seines</li> <li>• Gill nets for coastal</li> <li>• Long line hook</li> <li>• Boat</li> </ul>
Fishing gears components	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Sweeps and bridles</li> <li>• Netting material</li> <li>• Hangings</li> <li>• Anchor</li> <li>• Flotation devices</li> <li>• Ballast</li> <li>• By-catch reduction devices</li> <li>• Flags, buoys and droppers</li> <li>• Gear detection devices</li> <li>• Connecting devices: <ul style="list-style-type: none"> <li>✓ Knots</li> <li>✓ Clips</li> </ul> </li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• By catch discards</li> <li>• Processing wastes where catch is processed onboard</li> <li>• Plastic wastes due to abandoned</li> <li>• Lost and discarded fishing gear</li> <li>• Bilges and other wastes from the boat operations</li> </ul>

Evidence Guide		
Critical Aspects of Competence		<p>Demonstrate the skill and knowledge of:</p> <ul style="list-style-type: none"> <li>• Identify anatomy and physiology of fish</li> <li>• Reproduction pattern of fish</li> <li>• Understand and identify fish habitats and common species</li> <li>• Maintain, adjust and position the boat and the gear during deployment, fishing and retrieval</li> <li>• Collect Fishes from the fishing nets and hooks</li> <li>• Handle caught fishes</li> <li>• Handle Waste material produced during fishing</li> <li>• Understand fishing techniques</li> </ul>
Required Knowledge and Attitudes		<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Fishing technique and procedure</li> <li>• Techniques of handling caught fishes</li> <li>• Fish waste handling</li> <li>• Fishing safety procedures</li> <li>• Fish behavior and characteristics</li> <li>• Fish gear components</li> <li>• Mesh size, net material, hanging ratio</li> <li>• Ballast and flotation</li> <li>• Boat operation and position</li> <li>• Understand the water wave</li> <li>• Monitor the nature and position of benthic features</li> </ul>
Required skills		<p>Demonstrate skill of:</p> <ul style="list-style-type: none"> <li>• Maintain, adjust and position the boat and the gear during deployment, fishing and retrieval</li> <li>• Collect Fishes from the fishing nets and hooks</li> <li>• Techniques of handling caught fishes</li> </ul>

	<ul style="list-style-type: none"> <li>• Apply Waste material disposal and handling</li> <li>• Adjusting gear components to improve performance</li> <li>• Use and repair netting gear</li> <li>• Operate boats</li> <li>• Collect catch and effort data</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture Level II	
<b>Unit Title</b>	<b>Make and Mend Fishing net</b>
<b>Unit Code</b>	<a href="#"><u>AGR FAQ2 02 0722</u></a>
<b>Unit Descriptor</b>	This unit of competency covers the required knowledge, skills and attitude to make, mend fishing nets and proper handling materials tools and waste disposal.

Element	Performance Criteria
1. Prepare for net making and mending	<p>1.1. Net making and repairing area are identified and organized</p> <p>1.2. <i>Tools, materials</i> and <i>equipment</i> are identified and organized for net making and mending</p> <p>1.3. <i>Types of fishing nets</i> are identified and understood</p> <p>1.4. <i>Personal protective equipment</i> (PPE) and <i>Occupational health and safety</i>(OHS) are identified and prepared for use</p> <p>1.5. Net design are identified and interpreted according to the specification</p> <p>1.6. <i>Net components</i> and source associated are identified and ready to secure</p>
2. Make fishing net	<p>2.1 Setting up fish net making is performed by choosing string and by preparing shuttle and gauge</p> <p>2.2 Net making are started by loading shuttle and make a loop with an over hand knot</p> <p>2.3 Net making are finished by replace gauge and shuttle over the loops</p> <p>2.4 The fish nets are completed with frame or weight</p> <p>2.5 net component materials are securely attached according to specification standard</p>
3. Mend fishing net	3.1 Damaged place are identified and <i>twines are secured</i> to the net according to net repairing procedure

	<p>3.2 Twine is used to tie <i>knots</i> that make meshes to resemble original netting</p> <p>3.3 The existing and replacement materials are joined using twine and knots/ lacing to resemble original netting</p>
4. Complete make and mend fishing net	<p>4.1 During net making and repairing <i>Waste materials</i> are handled according to industry guidelines.</p> <p>4.2 Materials, tools and equipment are cleaned and stored at the appropriated place</p> <p>4.3 Works are competed, reported and documented</p>

Variable	Range
Materials, tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Gauge</li> <li>• Shuttles</li> <li>• Purse seine netting:</li> <li>• Polyamide (nylon) (PA)</li> <li>• Polyethylene (PE)</li> <li>• Twine</li> <li>• Strengthening ropes.</li> <li>• Knives</li> <li>• Multifilament</li> <li>• Netting needles:</li> <li>• Buoys</li> <li>• Scissors</li> <li>• Stands</li> <li>• Tensioning devices.</li> </ul>

PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Overalls</li> <li>• Raincoat</li> <li>• Gloves,</li> <li>• Non-slip and waterproof boots (gumboots) or other safety footwear</li> <li>• Protective eyewear, glasses and face mask</li> </ul>
OHS	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Workplace environment and safety handling of materials, tools and equipment</li> <li>• Use of firefighting equipment and industry first aid kits,</li> <li>• Following OHS procedure to control hazard and hazardous materials/substances</li> </ul>
Net components	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Floater</li> <li>• Sinker</li> <li>• Anchor</li> <li>• Rope</li> </ul>
Types of fishing nets	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Gillnets</li> <li>• Entanglement nets,</li> <li>• Surrounding net,</li> <li>• Seine nets, and</li> <li>• Trawls.</li> </ul>
Twines are secured:	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Double sheet bend</li> <li>• Sheet bend with overhand knot.</li> </ul>

Knots	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Baiting</li> <li>• Double sheet bend</li> <li>• Joining (fisherman's) knot</li> <li>• Rolling hitch or hanging knots</li> <li>• Sheet bend tied horizontally and vertically</li> <li>• Side knot: <ul style="list-style-type: none"> <li>• Net maker's</li> <li>• Two half hitches</li> </ul> </li> <li>• Sewn with meshes horizontal</li> <li>• Sewn with meshes vertical.</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Derbies</li> <li>• Damaged nets</li> <li>• Unused materials</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Identify and interpret net design according to the specification</li> <li>• Identify and understand types and components of fishing nets</li> <li>• Set up fishing net making by preparing shuttle and gauge</li> <li>• Identify and make ready net components</li> <li>• Identify damaged place of fishing net and secured twines</li> <li>• Making and mending fishing net</li> </ul>
Required Knowledge	<p>Must demonstrate knowledge to:</p> <ul style="list-style-type: none"> <li>• identify and understand types and components of fishing nets</li> </ul>



	<ul style="list-style-type: none"> <li>• Understand and interpret net design according to the specification</li> <li>• Understand net making and repairing techniques</li> <li>• Identify net component materials</li> <li>• Identify damaged place of fishing nets</li> <li>• Understand way of Waste materials handling</li> <li>• Understand and identify Reporting ways, communication and documentation</li> </ul>
Required skills	<p>Fish net making demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Set up fishing net making by preparing shuttle and gauge</li> <li>• Making and mending fishing net</li> <li>• Apply Personal protective equipment (PPE) and Occupational health and safety(OHS)</li> <li>• Identify and interpret net design according to the specification</li> <li>• Identify and make ready net components</li> <li>• Apply Waste materials handling procedures</li> <li>• Identify damaged place of fishing net and secured twines</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

**Occupational Standard: Fishery and Aquaculture L-II [IAGR FAQ2 03 0722](#)**

<b>Unit Title</b>	<b>Perform Fish Feeding</b>
<b>Unit Code</b>	
Unit Descriptor	This unit of competency covers the required knowledge, skills and attitude to identify sources and types of feeds, prepare for feeding and perform feeding.

Elements	Performance Criteria
1. Prepare for feeding	1.1 <b>Tools, materials and equipment</b> are identified and organized for fish feeding 1.2 Types of fish feed are understood 1.3 <b>Personal protective equipment (PPE)</b> and Occupational health and safety(OHS) are identified and prepared for use 1.4 Fish species and stock are identified and understood for feeding
2. Identify Sources and Types of feeds	2.1 <b>Fish feed sources</b> are identified. 2.2 Fish species <b>feeding habits</b> are determined 2.3 <b>Artificial feeds</b> are Identified 2.4. <b>Natural feed</b> are Identified
3. Perform feeding	3.1. Feeding requirements of stock species, under given conditions are identified. 3.2. <b>Methods of Feeding</b> Fish are identified and performed 3.3. <b>Feeding schedule</b> are performed 3.4. <b>Factors and conditions affecting feeding</b> are identified 3.5. Optimum stocking density under given conditions is determined. 3.6. Effectiveness of feeding activities is monitored and steps taken to reduce wastage. 3.7. <b>Conditions affecting feeding operation are considered and allowance made during feeding.</b> 3.8. Feeds are stored in a way that minimizes degradation or

	contamination.
4. Clean up on completion of work	<p>4.1. usable Materials are returned to store and disposable material are disposed according the work instruction</p> <p>4.2. Material, Tools, equipment and machinery are cleaned, maintained, handled, transported and stored according to the industry guidelines.</p> <p>4.3. Documents are organized or documented and reported to Responsible body</p>

Variable	Range
Tools, materials and equipment	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Shovel</li> <li>• Sack</li> <li>• Barrel</li> <li>• Weight balance</li> <li>• Feeding machine</li> <li>• Wheelbarrow</li> <li>• Basket</li> </ul>
Fish feed sources	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Natural food</li> <li>• Artificial feeds</li> </ul>
Artificial feeds	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Fish pellet</li> <li>• Flakes</li> <li>• Chips</li> </ul>
Natural feed	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• phytoplankton</li> <li>• Zooplankton</li> </ul>
Feeding methods	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Manual feeding</li> <li>• Automatic feeding</li> </ul>
Feeding habits	<p>May include not limited: -</p> <ul style="list-style-type: none"> <li>• Carnivores</li> </ul>

	<ul style="list-style-type: none"> <li>• Omnivores</li> <li>• Herbivores</li> </ul>
Feeding schedule	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Location of stock, stock types and age groups to be fed</li> <li>• Time at which feeding is to be carried out</li> <li>• Frequency (times per day, per hour)</li> <li>• Period over which feeding is to be carried out</li> </ul>
Personal Protective Equipment ( PPE)	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• sunhats</li> <li>• sunglass</li> <li>• overalls</li> <li>• wader</li> <li>• gloves</li> </ul>
Factors and conditions affecting feeding activity	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Age</li> <li>• Presence and activity of predators</li> <li>• Tides</li> <li>• Strong winds and rough water</li> <li>• Stock health</li> <li>• Algal blooms</li> <li>• Water quality</li> <li>• Dissolving oxygen</li> <li>• Quality of feeds</li> <li>• Feed additives</li> <li>• Rainfall</li> <li>• Time of day</li> <li>• Moulting or breeding cycle</li> <li>• weather condition</li> <li>• Stock density</li> </ul>

Evidence Guide	
Critical Aspects of the Unit	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Apply feeding of stocks through an effective feeding schedule and strategies that compensate for identified factors which inhibit or limit</li> </ul>

	<p>feed uptake and supervise staff responsible for feeding stock.</p> <ul style="list-style-type: none"> <li>• Understand feeding requirements of identified stock, stock types and age groups feed types factors and conditions that inhibit or limit feed uptake.</li> <li>• Understand operation process for effective production of algal or live-feed cultures,</li> <li>• Explain setting up, initiating and breeding, monitoring health and growth, harvesting and cleaning up.</li> <li>• Apply fertilizer for grow-out algae</li> </ul>
<p>Required Knowledge and Attitudes</p>	<p>Demonstrate knowledge and attitude of:</p> <ul style="list-style-type: none"> <li>• Understand feeding requirements of identify stock, stock types and age groups, feed types factors and conditions that inhibit or limit feed uptake.</li> <li>• Understand operation process for effective production of algal or live-feed cultures,</li> <li>• Safety considerations and hazards associated with feeding equipment options and limitations</li> <li>• Equipment calibration and operating methods</li> <li>• Feed handling</li> <li>• Effects of feeding on stock</li> </ul>
<p>Required Skills</p>	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Apply feeding of stocks through an effective feeding schedule</li> <li>• Recognizing abnormal stock behavior</li> <li>• Effects of environmental conditions on feeding</li> <li>• Identify and used Tools, materials and equipment for fish feeding</li> <li>• Use Personal protective equipment (PPE)</li> <li>• Identify fish species feed habits</li> <li>• Identify and apply methods of fish feeding</li> <li>• Schedule fish feeding</li> <li>• Store fish feed according to the procedures</li> </ul>

	<ul style="list-style-type: none"> <li>• Clean and store material, Tools, equipment at the appropriate places</li> <li>• Apply communication skills</li> <li>• Documents are collect, organize or documented and reported to responsible body</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fish and aqua culture production Level II	
Unit Title	Perform Fish Harvesting
Unit Code	<a href="#">AGR FAQ2 04 0722</a>
Unit Descriptor	This unit competency covers the knowledge, skills and attitude required to perform fish harvesting techniques from aquaculture, prepare facilities, proper harvesting of fish from aquaculture fish farm and handle harvested fish.

Element	Performance criteria
1. Prepare for fish harvest	<p>1.1. <i>Material, tools and equipments</i> are prepared for harvesting fish</p> <p>1.2. <i>Harvest schedule</i> is identified and confirmed with marketing and production harvest period.</p> <p>1.3. <i>Labour and resource requirements</i> for harvest are identified</p> <p>1.4. <b>Suitable <i>personal protective equipment</i> (PPE) and Occupational health safety (OHS) is identified and prepared for use</b></p> <p>1.5. <i>Risk factors</i> which could affect the quality of stock during harvest are identified</p>
2. Perform Fish harvesting from aquaculture	<p>2.1 Fish harvesting from Aquaculture by using different <i>harvesting techniques</i> are applied</p> <p><b>2.2 Equipment operation and work practices conform with occupational health and safety requirements</b></p> <p>2.3 Equipment is positioned, calibrated and operated according to farm procedures and manufacturer's guidelines</p> <p>2.4 Fishing net in aquaculture set to harvest fish according to Traditional method, modern method and harvesting machine fish harvest from aquaculture farms.</p> <p>2.5 Most significant among the <i>technological developments</i></p>

	<p>which support the evolution of fish harvest technology.</p> <p>2.6 Pond are seined, Cages are lifted , Harvested fishes are packed and transported</p> <p>2.7 Harvested fish is processed and stored according to handling standards</p>
3. Clean up on completion of work.	<p>3.1. Handle and clean harvested fish from aquaculture</p> <p>3.2. Transport of live fish stock is arranged and packing monitored to ensure minimal stock stress and damage records</p> <p><b>3.3. Harvest quantity, quality and size are confirmed and records prepared for harvested fish.</b></p> <p>3.4. Transport of dead stock is arranged and packing monitored to ensure minimal stock damage records</p> <p>3.5. Cleaned working areas and <i>Waste material</i> produced during work is handled according to working procedures</p>

Variables	Range
Tools, materials and equipment	<p>May includes but not limited to:</p> <ul style="list-style-type: none"> <li>• Boat</li> <li>• Vehicles,</li> <li>• Nets</li> <li>• Trucks,</li> <li>• Trailers</li> <li>• Wheelbarrow</li> <li>• Flow traps</li> <li>• Hand lines, fishing lines</li> <li>• Crowd nets and fish pumps or brails</li> <li>• Hides (used with dip nets)</li> <li>• Bait, attractants, foods</li> <li>• Holding and on-farm transport equipment: <ul style="list-style-type: none"> <li>➤ Buckets</li> <li>➤ Bins</li> <li>➤ Troughs</li> <li>➤ Tanks</li> </ul> </li> </ul>
Harvest schedule	May include, but not limited to :



	<ul style="list-style-type: none"> <li>• Timing of harvest</li> <li>• Period over which harvest is to occur</li> <li>• Quantities to be harvested</li> <li>• Type and extent of external damage: <ul style="list-style-type: none"> <li>➤ Size or weight</li> <li>➤ Sex or maturation condition</li> <li>➤ Shape or colour</li> <li>➤ Body condition (fat content, meat yield)</li> <li>➤ Live or dead</li> <li>➤ Whole or processed</li> </ul> </li> <li>• Temperature requirements (such as ice, slurries)</li> </ul>
Labor requirements	<p>May include, but not limited to :</p> <ul style="list-style-type: none"> <li>• Specialized equipment operators</li> <li>• Harvest workers</li> <li>• Boat operators</li> <li>• Forklift operators</li> <li>• Transport operators</li> </ul>
Personal Protective Equipment ( PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>
Risk factors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Stock damage, mortalities</li> <li>• Predator attack/damage</li> <li>• Stock escape</li> <li>• Equipment damage</li> <li>• Occupational health and safety</li> <li>• Equipment breakdown</li> <li>• Adverse climatic conditions</li> </ul>

Harvesting objectives	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gathering stock</li> <li>• Cleaning, moving and handling stock</li> <li>• Holding stock</li> <li>• Sorting and grading stock.</li> </ul>
Harvesting techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Traps</li> <li>• Gillnet</li> <li>• Beach sent</li> <li>• Cast net</li> <li>• Hooking</li> </ul>
Waste material	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Offal</li> <li>• Derbies</li> <li>• Damaged materials</li> <li>• Sea weed</li> <li>• Unwanted materials</li> </ul>

### Evidence Guide

Critical aspects of Competence	<p>Must demonstrate skills and knowledge to:</p> <ul style="list-style-type: none"> <li>• Identify and confirm Fish Harvest schedule and with marketing and production harvest.</li> <li>• Fish harvesting activities sorting, grading, holding and removal from water/holding facility and on-farm transport.</li> <li>• Monitor holding conditions, supervise and coordinate handling of stock including slaughter and live transport</li> <li>• Describe occupational health and safety standards consistent with harvest schedule and operational guidelines</li> <li>• Explain harvesting practices</li> <li>• Explain risks and mitigation procedures.</li> </ul>
Required Knowledge and Attitudes	<p>Must demonstrate knowledge to:</p> <ul style="list-style-type: none"> <li>• Harvesting principles and practices for specific stock types and culture structures</li> <li>• Quality assurance practices in stock harvesting, grading and transport</li> <li>• OHS issues regulated by Acts, regulations, codes of practice</li> </ul>

	<p>and industry standards.</p> <ul style="list-style-type: none"> <li>• <b>Humane slaughter methods.</b></li> <li>• Identify and confirm harvest schedule with marketing and production harvest period</li> <li>• Risk factors which could affect the quality of stock during harvest are identified</li> <li>• Fish harvesting from Aquaculture by using different harvesting techniques are applied</li> <li>• Equipment is positioned, calibrated and operated according to farm procedures and manufacturer's guidelines</li> <li>• Fishing net in aquaculture set to harvest fish according to Traditional method, modern method and harvesting machine fish harvest from aquaculture farms</li> <li>• Pond are seined, Cages are lifted , Harvested fishes are packed and transported</li> <li>• Handle and clean harvested fish from aquaculture</li> </ul>
Required Skills	<p>Required skills include:</p> <ul style="list-style-type: none"> <li>• Perform fish harvesting from aquaculture</li> <li>• Supervising and coordinating harvest and transport activities</li> <li>• Harvest schedule is identified and confirmed with marketing and production harvest period.</li> <li>• Fish harvesting from Aquaculture by using different harvesting techniques are applied</li> <li>• Equipment is positioned, calibrated and operated according to farm procedures and manufacturer's guidelines</li> <li>• Pond are seined, Cages are lifted , Harvested fishes are packed and transported</li> <li>• Harvested fish is processed and stored according to handling standards</li> <li>• Handle and clean harvested fish from aquaculture</li> <li>• Transport of dead stock is arranged and packing monitored to ensure minimal stock damage records</li> <li>• Cleaned working areas and Waste material produced during work is handled according to working procedures</li> <li>• Tools and equipment are cleaned, handle, maintained and stored.</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> </ul>

	<ul style="list-style-type: none"><li>• Observation/Demonstration with Oral Questioning</li></ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture Level II	
Unit Title	Apply Emergency Procedures
Unit code	<a href="#">AGR FAQ 2 05 0722</a>
Unit descriptor	This unit competency covers the knowledge, skills and attitude required to Identify emergencies risks and hazards, take mitigation measures and assess risk and hazards impact

Element	Performance Criteria
1. Identify emergencies risks	<p>1.1. Contingency plans and loss minimization strategies are noted and allocations of labor and financial resources are confirmed with management</p> <p>1.2 <i>Type of risks and hazards</i> are identified and understood</p> <p>1.2. Risks and hazard presentation mechanisms are identified and understood according to occupational health safety (OHS) procedures.</p> <p>1.5. Equipment storage is monitored to ensure ready access and maintenance in working condition.</p> <p>1.6. Suitable <i>personal protective equipment</i> (PPE) is selected and checked prior to use</p>
2. Take risk and hazards mitigation measures	<p>2.1. Identified risks and hazards are prioritized according to the working procedures.</p> <p>2.2 Contingency plans and loss minimization strategies are tested under simulated emergency conditions, performance analyzed and recommendations made to management on improvements</p> <p>2.2. Risk mitigation measures are applied according to the working procedures.</p> <p>2.3. Stock and asset are properly handled to minimize risks and hazards</p>

	<p>for fishery and aquaculture.</p> <p>2.5. Equipment operation and work practices conform to <b><i>occupational health and safety requirements.</i></b></p> <p>2.6 Appropriate communication ways are performed according to the working procedures.</p>
3. Complete works	<p>3.1. Equipment is cleaned, repaired and stored in accordance with enterprise procedures.</p> <p>3.2. Lost stock and assets are replaced; damages are repaired quickly and efficiently.</p> <p>3.3. Documents are organized, documented and reported according to the enterprise guideline.</p>

Variables	Range
Emergencies:	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Climatic</li> <li>• biological (pests, predators, diseases)</li> <li>• mechanical (breakdowns)</li> <li>• human (poaching, vandalism and malicious damage, theft, unintentional misshape)</li> <li>• pollution</li> </ul>
Type of risks and hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Biological hazard</li> <li>• Chemical hazard</li> <li>• Physical hazard</li> <li>• Ergonomic hazard</li> </ul>
Personal Protective Equipment ( PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• sunhats</li> <li>• Sunglass</li> <li>• Sunscreen creams</li> </ul>

	<ul style="list-style-type: none"> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>
Occupational health and safety requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Codes of practice</li> <li>• Rules and Regulations</li> <li>• Guidance notes which may apply in a jurisdiction</li> <li>• Enterprise-specific occupational health and safety procedures,</li> <li>• Policies or standards</li> </ul>

<b>Evidence Guide</b>	
Critical aspects of Competency	<p>Must demonstrate knowledge and skill to:</p> <ul style="list-style-type: none"> <li>• Identify and understand type of risks and hazards</li> <li>• Select and check suitable personal protective equipment (PPE)</li> <li>• Prioritize identified risks and hazards according to the working procedures.</li> <li>• Take risk mitigation measures</li> <li>• Operate equipment based on occupational health and safety requirements.</li> <li>• Organize documents and report according to the concerned body</li> <li>• Replace and repair damaged assets and lost stock quickly and efficiently.</li> </ul>
Required knowledge and attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Identify and understand type of risks and hazards</li> <li>• Identify and understand presentation mechanisms of risk and hazard</li> </ul>

	<ul style="list-style-type: none"> <li>• Understand suitable <i>personal protective equipment</i> (PPE)</li> <li>• Prioritize identified risks and hazards</li> <li>• Contingency plans and loss minimization strategies under simulated emergency conditions,</li> <li>• Risk mitigation measures according to the working procedures.</li> <li>• Appropriate communication ways</li> <li>• Lost stock and assets are replaced damages are repaired quickly and efficiently.</li> <li>• Document organizing, documenting and reporting according to the enterprise guideline.</li> <li>•</li> </ul>
Required skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> <li>• Identify type of risks and hazards</li> <li>• Presentation mechanisms of risk and hazard</li> <li>• Use suitable <i>personal protective equipment</i></li> <li>• Prioritize identified risks and hazards</li> <li>• Take risk mitigation measures according to the working procedures.</li> <li>• Appropriate communication ways</li> <li>• Documentation and reporting</li> <li>• Assess risk impact</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.



<b>Occupational Standard: Fishery and Aquaculture Level II</b>	
<b>Unit Title</b>	<b>Perform Fish Gutting and Filleting</b>
<b>Unit code</b>	<a href="#"><u>AGR FAQ2 06 0722</u></a>
<b>Unit descriptor</b>	This unit of competency covers the knowledge, skills and attitude required to perform gutting, cut filets slice cutlets, skinning, cutting portions from the fillets. It includes the ability to select and check equipment, fillet, trim and remove bones and skin, cut portions, rinse and chilling these fish product within an organization or aquaculture facility, or wholesale or retail outlet that sells fish.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare work area for gutting and filleting	<p>1.1. Select, calibrate and check for cleanliness the fish cleaning /gutting and filleting <i>tools, materials, equipment and machines</i> required for gutting and filleting work</p> <p>1.2. <i>Occupational health and safety(OHS)</i> procedures and safe working practice are applied including the selection of <i>persona protective equipment (PPE)</i></p> <p>1.3. Fish are visually inspected for any signs of spoilage, defects, parasites and defective fish are identified and set aside.</p> <p>1.4. Clean work area before commencing and maintain hygienic conditions for operations.</p>
2. Perform fish gutting	<p>2.1. Carry out fish gutting work with manual or machine according to organizations guidelines.</p> <p>2.2. Scales are removed leaving skin undamaged, and the fish rinsed free of loose scales in potable water.</p> <p>2.3. Gills and guts are removed without cutting into the flesh, and the fish rinsed free of loose debris, in potable water</p> <p>2.4. Fish parts are placed into correct container for further processing or disposal.</p> <p>2.5. Fish cleaning/gutting meets organization productivity</p>

	<p>requirements</p> <p>2.6. Visually inspect and set aside <b>fillets</b> that show signs of spoilage, defects or parasites</p>
3. Perform fish filleting	<p>3.1 Carry out fish filleting work with manual or machine according to organizations guidelines.</p> <p>3.2 Use filleting equipment safely to prepare fillets and portions to productivity and yield requirements for the species</p> <p>3.3 Visually inspect and set aside fillets that show signs of spoilage, defects or parasites</p> <p>3.4 Trim fillets and remove bones, ensuring cuts are smooth with no jagged edges</p> <p>3.5 Remove skin, leaving flesh smooth and without tears, and place skin tissue in the correct hygienic container</p> <p>3.6 Cut portions to the size, weight and shape according to work instructions and productivity and yield requirements</p> <p>3.7 Trim steaks and cutlets, as required to meet organization requirements.</p>
4. Finalize gutting and filleting operation	<p>4.1 Cleaned/gutted and filleted fish are displayed or stored according to work <i>instruction</i>.</p> <p>4.2 Identification and traceability of cleaned/gutted and filleted fish product is maintained through accurate and compliant labeling.</p> <p>4.3 Rinse fillets, including portions, steaks and cutlets, quickly in potable water and chill ready for further processing</p> <p>4.4 Offal's handling and disposed appropriately and <i>Waste materials</i> produced during cleaning/gutting and filleting work clean appropriately dispose.</p> <p>4.5 Record keeping is carried and problems are reported out for both gutted and filleted fish.</p>

	<p>4.6 The cleaning/gutting and filleting operation shall follow and respect the <i>food safety and hygiene regulations and procedure</i></p> <p>4.7 Used tools, materials and equipment are cleaned and stored safely</p>
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Variables	Range
Tools, materials, equipment and machines	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fish cleaning/gutting machine</li> <li>• Fish filleting machine</li> <li>• potable water and ice</li> <li>• band saw</li> <li>• Fish scaler</li> <li>• fish filleting troughs</li> <li>• Filleting knives</li> <li>• Cleaning/gutting knives</li> <li>• Deboning knives</li> <li>• Cleaning/gutting and filleting table</li> <li>• Fish boxes and tubs</li> <li>• Trays</li> <li>• Weighing balance</li> <li>• Deboning machines</li> <li>• Fat suction tools and equipment</li> <li>• Fish tubs and bins</li> <li>• Hand-held scale</li> <li>• Scaling knife</li> <li>• Scaling machine</li> <li>• Packaging material</li> <li>• Chiller</li> </ul>

	<ul style="list-style-type: none"> <li>• Ice box</li> <li>• Ice machine</li> </ul>
Instructions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fish and Fishery Product Quality Assurance regulation (FPQAR)</li> <li>• Enterprise policies and procedures</li> <li>• Manufacturer instructions</li> <li>• Material Safety Data Sheets (MSDS)</li> <li>• OHS standards and procedures</li> </ul>
Food safety and hygiene regulations and procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Ethiopian quality inspection standard, Export Control (Fish) orders</li> <li>• HACCP</li> <li>• Hygiene and sanitation requirements</li> <li>• Primary Products Standard and the Ethiopian fish food Standard (voluntary)</li> <li>• Requirements set out in Ethiopian or Food Standards Code of conduct.</li> </ul>
Personal protective equipment (PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves, mitts or gauntlets, and protective hand and arm covering</li> <li>• Insulated protective clothing for freezers or chillers and refrigeration unit</li> <li>• non-slip and waterproof boots (gumboots) or other safety footwear</li> <li>• Protective hair, beard and boot covers</li> <li>• Uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons.)</li> <li>• Overcoat</li> <li>• Plastic boots</li> </ul>

	<ul style="list-style-type: none"> <li>• Gown</li> <li>• Face mask</li> </ul>
Occupational health and safety (OHS)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Workplace environment and safety handling of materials, tools and equipment</li> <li>• Use of firefighting equipment and industry first aid kits</li> <li>• Following OHS procedure to control hazard and hazardous materials/substances</li> <li>• Checking and fulfilling required safety devices before starting operation</li> </ul> <p>Apply safe operating procedures regarding:</p> <ul style="list-style-type: none"> <li>➤ Electrical safety,</li> <li>➤ Machinery movement and operation,</li> <li>➤ Manual and mechanical lifting and shifting,</li> </ul> <ul style="list-style-type: none"> <li>• Apply emergency procedures: <ul style="list-style-type: none"> <li>➤ Emergency shutdown and stopping of equipment</li> <li>➤ Using extinguishing fires</li> <li>➤ First aid application and site evacuation.</li> </ul> </li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Head and guts, bone and meat scraps/derbies and blood and whole rejected fish as well as cleaning sewerage.</li> <li>• Fish wastes will be either disposed according to industry work procedures or recycled or re-used or returned to manufacturer.</li> <li>• Utilize to fish meal and other purposes</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Perform fish gutting and filleting work</li> <li>• Remove scales without damaging skin, and rinse the fish with potable water.</li> </ul>

	<ul style="list-style-type: none"> <li>• Place fish parts into correct container for further processing or disposal</li> <li>• Cut portions to the size, weight and shape</li> <li>• Remove skin, leaving flesh smooth and without tears, and place skin tissue in the correct hygienic container</li> <li>• Maintain and trace cleaned/gutted and filleted fish product</li> <li>• Handle and dispose offal's and <i>waste materials</i> produced during cleaning/gutting and filleting</li> <li>• Sharpen and use knife to perform gutting and filleting</li> <li>• Follow OHS procedures and food safety procedures when sharpening knives</li> </ul>
Required Knowledge	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Understand personal, workplace and product hygiene principles</li> <li>• Understand food safety procedures and regulations that apply when handling and storing fish</li> <li>• Understand fish species and parts, including gills, gonads, scales, roe, kidneys and swim bladder</li> <li>• Understand chemical composition of fish</li> <li>• Understand the location of bones and dark meat in different fish species</li> <li>• Causes of fish spoilage</li> <li>• Spoilage pattern and common fish defects, diseases and parasites for species being gutted and filleted</li> <li>• Health and safety requirements when using knives, cutting equipment and lifting and handling boxes of fish and fish products</li> <li>• Safe manual handling techniques used for preparing fish in minimizing the risk of repetitive, forceful, constrained or awkward posture</li> <li>• Workplace quality system procedures addressing fish</li> </ul>

	identification and traceability and workplace productivity and yield requirements.
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Select, prepare and use cleaning/gutting and filleting equipment safely</li> <li>• Appropriate use of fish cleaning/gutting and filleting tools and equipment</li> <li>• Communication and recording skill</li> <li>• Handle fish and fish cleaning equipment safely and hygienically</li> <li>• Identify signs of spoilage and common fish defects, diseases and parasites</li> <li>• Identify species and fish parts, such as gills, gonads, scales, roe, kidneys and swim bladder</li> <li>• Operate fish gutting and filleting machine</li> <li>• Gut and fillet all commercial importance fish</li> <li>• Put the carcasses onto appropriate container and place</li> <li>• Weigh fish fillet</li> <li>• Label gutted fish and fillet</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> <li>• Skills must be demonstrated in a fish processing workplace or an environment that accurately represents workplace conditions</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture II	
Unit Title	Implement Agribusiness Marketing
Unit Code	<a href="#">AGR FAQ2 07 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to Understand concept of agricultural marketing Understand concepts of agribusiness Identify marketing targets for Agricultural products Implement marketing strategy . Establish contract farming, and Apply Agricultural marketing services.

Element	Performance Criteria
1. Understand concept of agricultural marketing	<p>1.1 <i>.Concept of agricultural marketing</i> is understood for Agricultural marketing</p> <p>1.2 Importance of agricultural marketing is understood to provide agricultural marketing services</p> <p>1.3 <i>.Roles of agricultural market</i>-oriented service is identified and understood</p> <p>1.4 <i>.Principles of agricultural marketing</i> and strategies are identified and understood</p> <p>1.5 <i>Marketing mix</i> is understood to implement agricultural marketing activities</p> <p>1.6 <i>Types of marketing</i> are understood and identified to implement the appropriate marketing services</p>
2. Understand concepts of agribusiness	<p>2.1. <i>Concept of agribusiness</i> is understood for Agricultural marketing</p> <p>2.2 Importance of agribusiness is understood to provide agribusiness services</p> <p>2.3 <i>Roles of agribusiness</i>-oriented service is identified and understood</p> <p>2.4 <i>Principles of agribusiness</i> and strategies are identified and understood</p> <p>2.5. <b>Characteristic of Agribusiness</b> are understood to implement Agribusiness</p> <p>2.6. <b>Dimension and structures</b> of Agribusiness are understood and distinguished</p>
3. Identify marketing targets for Agricultural products	<p>3.1 <i>.Marketing targets</i> are identified for Agricultural products and services</p> <p>3.2 <i>Approaches of agricultural market</i> are understood for agricultural market product and service.</p> <p>3.3 <i>Segment descriptors</i> are used to display the targets of agricultural market</p> <p>3.4 <i>Strategic of agricultural marketing options</i> are identified to develop agricultural <i>marketing plan</i></p> <p>3.5 Business plans are prepared to perform cost and benefit analysis</p>



4. Implement marketing strategy	<p>4.1 .Agricultural marketing functions strategy is designed to perform agriculture business.</p> <p>4.2 <b>Action plan</b> is developed to implement Agricultural marketing strategies.</p> <p>4.3 .Require resource are identified and coordinated to implement agricultural marketing</p> <p>4.4 Marketing mix is implemented according to the strategy Agricultural.</p>
5. Establish contract farming	<p>5.1 Concept of <b>contract farming</b> is understood to enhance market oriented production</p> <p>5.2 <b>Types of contract farming</b> are identified to select the appropriate approach</p> <p>5.3 <b>Models of Contract</b> farming are understood and identified</p> <p>5.4. Steps and procedures of contract farming establishments are identified</p> <p>5.5 Contract farming <b>requirements</b> are identified and applied based on the organizational standard</p> <p>5.6 Contract farming systems are established</p>
6. Apply Agricultural marketing services	<p>6.1 Agricultural products are identified to delivered provided marketing services</p> <p>6.2 Need assessment is conducted to identify <b>marketing conditions</b></p> <p>6.3 <b>Market strategies</b> are developed to implement the Agricultural marketing services</p> <p>6. 4Customer feedbacks are collected and organized to improve Agricultural marketing services</p> <p>6.5 Data is organized and documented to report the appropriate body.</p>

Variable	Range
Concept agricultural marketing	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Needs</li> <li>• Product</li> <li>• Demand</li> <li>• Value</li> <li>• Transaction</li> <li>• Satisfaction and Quality</li> <li>• Exchange</li> <li>• Market</li> </ul>
Roles marketing	<p>May include but not limited to:</p>

	<ul style="list-style-type: none"> <li>• Determine price</li> <li>• Consumer choice</li> <li>• Increase efficiency</li> <li>• Improve scarcity</li> </ul>
Principles agricultural marketing	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Product</li> <li>• Price</li> <li>• promotion</li> <li>• Place</li> <li>• People</li> <li>• Process</li> </ul>
Marketing mix	<ul style="list-style-type: none"> <li>• May include, but not limited to: <ul style="list-style-type: none"> <li>• Price</li> <li>• Promotion</li> <li>• Place</li> <li>• Product</li> </ul> </li> </ul>
Types of marketing	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Perfect competitive</li> <li>• Monopoly</li> <li>• Oligopoly</li> <li>• Monopolistic</li> </ul>
Concept of Agribusiness	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural impute supply</li> <li>• Farmer producer</li> <li>• Process of wholesaler</li> </ul>

	<ul style="list-style-type: none"> <li>• Distribution and retailer</li> </ul>
Characteristic of Agribusiness	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Existence around production areas</li> <li>• Variety and size of Ag organization</li> <li>• Scale and type of competition</li> <li>• Conservativeness of Ag:</li> <li>• Decision making:</li> <li>• Community oriented business</li> </ul>
Dimension	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural sector and their interdependence</li> <li>• farm either private or government</li> <li>• Market oriented.</li> <li>• Dynamic sector and continuously meets current demands of consumers</li> <li>• Provides forward and backward linkages</li> </ul>
Structures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Input sector:</li> <li>• Farm/production sector:</li> <li>• Product sector:</li> </ul>
Marketing targets	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Demographic</li> <li>• Geographic</li> <li>• Psychographic</li> <li>• Behaviours pattern</li> </ul>
Marketing conditions	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Government</li> </ul>

	<ul style="list-style-type: none"> <li>• International transaction</li> <li>• Speculation and expectation</li> <li>• Supply and demand</li> </ul>
Agricultural Market strategies	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Analyse agricultural market</li> <li>• Analyse competition</li> <li>• Define market mix</li> <li>• Determine position</li> <li>• Marketing budget</li> <li>• Execution plan understand potential customers</li> </ul>
Approaches for agricultural market	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Functional</li> <li>• Institution</li> <li>• Commodity</li> <li>• Behavioural</li> </ul>
Segment descriptors	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Demographic</li> <li>• Behavioural</li> <li>• Geographic</li> <li>• Psychographic</li> </ul>
Marketing plans	<ul style="list-style-type: none"> <li>• May include, but not limited to</li> <li>• Function of marketing</li> <li>• Market program</li> <li>• Achieve the market objectives</li> </ul>

Action plan	<ul style="list-style-type: none"> <li>• May include, but not limited to: <ul style="list-style-type: none"> <li>• Resource</li> <li>• Budget</li> <li>• Times</li> <li>• Output</li> </ul> </li> </ul>
Contract farming	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Agreement between buyer and seller</li> <li>• Farmer and processing making firms for production</li> <li>• Supplies of agricultural product</li> </ul>
Types of contract farming	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Market specifying</li> <li>• Recourse providing</li> <li>• Production management</li> </ul>
Models of Contract	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Full model contract farming</li> <li>• Specific</li> </ul>
Requirements	<ul style="list-style-type: none"> <li>• Traceability</li> <li>• Site history and management</li> <li>• Propagation material</li> <li>• Soil/substrate management</li> <li>• Fertilizer use</li> <li>• Irrigation</li> <li>• Crop protection</li> </ul>

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<p>Critical Aspects of Competence</p>	<p>Must demonstrate skills and knowledge to:</p> <ul style="list-style-type: none"> <li>• Understand Concept of agribusiness to apply agribusiness marketing</li> <li>• Identify Principles of agribusiness and strategies to implement Agribusiness marketing</li> <li>• Determine Agricultural Marketing targets for provide products and services</li> <li>• Develop Action plan to implement Agricultural marketing strategies.</li> <li>• Prepare Business plans to perform cost and benefit analysis</li> <li>• Apply marketing conditions to conducted Need assessment for products and service</li> <li>• Understand concept of contract farming to enhance market oriented production</li> <li>• Apply appropriate models to established contract farming</li> <li>• Contract farming requirements are identified and applied based on the organizational guide line</li> <li>• Established Contract farming systems based on the organizational standard</li> </ul>
<p>Required Knowledge and Attitude</p>	<p>Demonstrate knowledge of :</p> <ul style="list-style-type: none"> <li>• Principles of agricultural marketing to implement marketing strategy</li> <li>• Concept of agribusiness to apply agribusiness marketing</li> <li>• the roles of agribusiness to perform agricultural marketing.</li> <li>• Principles of agribusiness and strategies to implement Agribusiness marketing</li> <li>• Agricultural Marketing targets that provide products and services</li> <li>• Required resource to implement agricultural marketing</li> <li>• concept of contract farming to enhance market oriented production</li> <li>• appropriate models to established contract farming</li> <li>• Contract farming systems based on the organizational standard</li> </ul>
<p>Required Skills</p>	<p>Demonstrate Skills to :</p> <ul style="list-style-type: none"> <li>• Determine <i>marketing options</i> to design marketing plan</li> </ul>

	<ul style="list-style-type: none"> <li>• Implement Agricultural marketing strategies develop action plan</li> <li>• Identified Agricultural Marketing targets for provide products and services</li> <li>• Select <i>Approaches</i> of agricultural market to implement product and service.</li> <li>• <i>Use segment descriptors</i> to display the targets of agricultural market</li> <li>• Develop Action plan to implement Agricultural marketing strategies.</li> <li>• Prepare Business plans to perform cost and benefit analysis</li> <li>• Apply marketing conditions to conducted Need assessment for products and service</li> <li>• Organize customer feedbacks to improve Agricultural marketing services</li> <li>• Apply appropriate models to established contract farming</li> <li>• Contract farming requirements to applied based on the organizational guide line</li> <li>• Established Contract farming systems based on the organizational standard</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture Level II	
Unit Title	Apply Basics of Human Nutrition Practices
Unit Code	<a href="#">AGR FAQ2 08 0722</a>
Unit Descriptor	This unit covers the knowledge, skill and attitude required to categorize agricultural foods items, recognize malnutrition in the community, identify the role of agriculture in nutrition and contribute to the awareness creation of the community in utilization of agricultural products.

Element	Performance Criteria
1. Identify Categories of agricultural foods items	<p>1.1. Basic <i>terminologies and concepts</i> in nutrition are identified and explained</p> <p>1.2. <i>Food groups, nutrient and their sources</i> of balanced diet are identified and explained</p> <p>1.3. <i>Origin</i> and composition of food stuffs are identified and described</p> <p>1.4. <i>Energy dense</i> and <i>nutrient dense</i> food sources are identified and explained</p>
2. Recognize malnutrition in the community	<p>2.1. Physical signs of malnutrition are identified and explained</p> <p>2.2. Forms, causes and consequences of <i>malnutrition</i> in different groups of community are identified</p> <p>2.3. Measures to overcome malnutrition, importance of maintenance of adequate and balanced diet are promoted</p> <p>2.4. Contribution is made in elders, family heads and women awareness creation programs</p>
3. Identify the role of agriculture in nutrition	<p>3.1. The role of agriculture as source of variety foods is recognized and promoted</p> <p>3.2. The contribution of agriculture sector in nutrition sensitive intervention is described</p> <p>3.3. <i>Nutrition sensitive agricultural practices</i> are identified and</p>



	communicated as per the nutrition program guideline
4. Demonstrate diversified Agricultural food production and consumption techniques	<p>4.1. Importance of diet diversification is identified and discussed with family holds and community according to the program guideline</p> <p>4.2. Techniques of diversified food production are identified and demonstrated to farmers and family members</p> <p>4.3. <b>Techniques of enhancing</b> the nutrient content of family foods are assessed and implemented according to the program guideline and cultural requirements of the rural community</p> <p>4.4. Utensils are identified and cooking techniques demonstrated for specific agricultural products</p> <p>4.5. PPE are selected and used in accordance to OHS requirement and code of ethics</p> <p>4.6. Balanced and nutrient dense diet preparation is demonstrated using food stuff ingredients</p>
5. Perform proper handling and storage of agricultural food products	<p>5.1. Importance of <b>hygiene</b> for nutrition is explained</p> <p>5.2. <b>Storage facilities</b> are identified and family holds supported in construction.</p> <p>5.3. Agricultural products are <b>safely handled and stored</b></p> <p>5.4. Methods and techniques of safely handling and storing agricultural products are demonstrated in accordance products requirement</p>
6. Document and report food production, consumption and difficulties	<p>6.1. Diversified food production and consumption activities are documented</p> <p>6.2. Difficulties happened in the processes are reported to the respective authorities.</p>

Variable	Range
Terminologies and concepts	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Food</li> <li>• Diet</li> </ul>

	<ul style="list-style-type: none"> <li>• Nutrient</li> <li>• Balanced Diet</li> <li>• Nutritious food</li> <li>• Hidden hunger</li> <li>• Malnutrition</li> <li>• Stunting</li> <li>• Underweight</li> <li>• Overweight</li> <li>• Nutrition</li> <li>• Diversification</li> <li>• Body growth</li> <li>• Body Development</li> <li>• Food fortification</li> <li>• Bioavailability</li> <li>• Food taboos</li> <li>• Window of opportunity</li> <li>• Fortification</li> <li>• Food security</li> <li>• Nutrition security</li> <li>• Small holder farmer</li> <li>• Cretinism</li> </ul>
Food groups	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Vegetables food group</li> <li>• Fruits food group</li> <li>• Legumes and nuts food group</li> <li>• Animal source food group</li> </ul>

	<ul style="list-style-type: none"> <li>• Fats oils and sweets food group</li> <li>• Staples food group</li> </ul>
Nutrient and their sources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Lipids/Fats</li> <li>• Proteins</li> <li>• Minerals</li> <li>• Vitamins</li> </ul>
Food origin	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal</li> <li>• Plant</li> </ul>
Energy dense	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Calories</li> <li>• Nutrient</li> </ul>
Nutrient dense	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Vitamins</li> <li>• Minerals</li> <li>• Fibbers</li> </ul>
Malnutrition	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Under nutrition may be: <ul style="list-style-type: none"> <li>➤ stunting</li> <li>➤ wasting</li> <li>➤ underweight</li> </ul> </li> <li>• Over nutrition may be: <ul style="list-style-type: none"> <li>➤ obesity</li> </ul> </li> </ul>

	➤ overweight
Nutrition sensitive agricultural practices	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Nutrition sensitive agricultural intervention</li> <li>• Diversification in: <ul style="list-style-type: none"> <li>➤ Production of fruits, vegetable, nutritious roots, cereals, pulse, and mushroom</li> <li>➤ Animal source foods (Dairy, poultry, shoat, fish)</li> </ul> </li> </ul>
Techniques of enhancing	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fortification,</li> <li>• Germination,</li> <li>• Fermentation,</li> <li>• Roasting and Cooking</li> </ul>
Hygiene	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Food hygiene</li> <li>• Personal hygiene</li> <li>• Environmental hygiene</li> </ul>
Storage facilities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Bins</li> <li>• Refrigerator</li> <li>• Shelf</li> <li>• Rack and Barn</li> </ul>
Safely handling and storing	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Sanitation</li> <li>• Ventilation</li> </ul>

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Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Use utensils and prepare balanced nutrition</li> <li>• Distinguish and demonstrate energy dense and nutrients- dense foods and preparation techniques</li> <li>• Demonstrate food storing and preserving techniques</li> <li>• Explain the need for variety and diversification of foods</li> <li>• Explain agricultural food types, and sources</li> <li>• Describe forms, causes and consequences of excess or deficient intake of certain food types</li> <li>• Maintain personal hygiene to minimize risk to food product safety</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Terminologies and concepts of nutrition</li> <li>• OHS requirements</li> <li>• Food groups and nutrient composition and diet requirement</li> <li>• Adequate and balanced diets</li> <li>• Agricultural food types, and sources</li> <li>• Need for variety and diversification of family diet with a variety of agricultural food products</li> <li>• Basic principles of producing quality/ nutritious agricultural products</li> <li>• Effect of food production and /or preparation on nutrient content of a variety of energy- dense and nutrients- dense foods</li> <li>• Child and maternal nutrition</li> <li>• Forms, causes and consequences of malnutrition</li> <li>• Basic food safety principles and requirements</li> <li>• Hygiene and food safety procedures</li> <li>• food safety recording requirements</li> <li>• Common hazards and sources of contamination in area of work</li> <li>• Legal and regulatory requirements pertaining to food production, storage, handling and packaging relevant to area of work</li> <li>• Personal hygiene practices and clothing requirements relevant to area of work.</li> </ul>

Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Categorize agricultural food items into major food groups based on their nutrient contents</li> <li>• Identify local varieties of animal and plant products,</li> <li>• Demonstrate production and /or preparation of nutrient rich diets</li> <li>• Communicate appropriate information with regard to diversified foods for pregnant women and children</li> <li>• Demonstrate various methods of integrated nutritious agricultural products production</li> </ul>
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	<ul style="list-style-type: none"> <li>• Identify the consequences of excess or deficient intake of certain food types</li> <li>• Demonstrate how to enhance nutrient content using different food groups</li> <li>• Handle food products to prevent damage, spoilage and waste</li> <li>• Identify hazards, contaminants and risks or control points</li> <li>• Document and report food safety hazards and risks to appropriate personnel</li> <li>• Store food products in appropriate areas at correct temperatures</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture II	
Unit Title	Apply 5S Procedures
Unit Code	<a href="#">AGR FAQ2 09 0722</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to apply 5S techniques to his/her workplace. It covers responsibility for the day-to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.

Elements	Performance Criteria
1. Prepare for work.	<p>1.1. Work instructions are used to determine job requirements, including method, material and equipment.</p> <p>1.2. Job specifications are read and interpreted following working manual.</p> <p>1.3. <b>OHS requirements</b>, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.</p> <p>1.4. <b>Tools and equipment</b> are prepared and used to implement 5S.</p> <p>1.5. <b>Safety equipment and tools</b> are identified and checked for safe and effective operation.</p> <p>1.6. Kaizen Board (Visual Management Board) is prepared and used in harmony with different workplace contexts.</p>
2. Sort items.	<p>2.1. Plan is prepared to implement sorting activities.</p> <p>2.2. Cleaning activities are performed.</p> <p>2.3. All <b>items</b> in the workplace are identified following <b>the appropriate procedures</b>.</p> <p>2.4. Necessary and <b>unnecessary items</b> are listed using the <b>appropriate format</b>.</p> <p>2.5. <b>Red tag</b> strategy is used for unnecessary items.</p> <p>2.6. Unnecessary items are evaluated and placed in an appropriate place other than the workplace.</p> <p>2.7. <b>Necessary items</b> are recorded and quantified using appropriate format.</p> <p>2.8. Performance results are reported using appropriate formats.</p> <p>2.9. Necessary items are regularly checked in the workplace.</p>

3. Set all items in order.	<p>3.1. Plan is prepared to implement set in order activities.</p> <p>3.2. General cleaning activities are performed.</p> <p>3.3. Location/Layout, storage and indication methods for items are decided.</p> <p>3.4. Necessary tools and equipment are prepared and used for setting in order activities.</p> <p>3.5. Items are placed in their assigned locations.</p> <p>3.6. After use, the items are immediately returned to their assigned locations.</p> <p>3.7. Performance results are reported using appropriate formats.</p> <p>3.8. Each item is regularly checked in its assigned location and order.</p>
4. Perform shine activities.	<p>4.1 Plan is prepared to implement shine activities.</p> <p>4.2 Necessary tools and equipment are prepared and used for shining activities.</p> <p>4.3 <b>Shine activity</b> is implemented using appropriate procedures.</p> <p>4.4 Performance results are reported using appropriate formats.</p> <p>4.5 Regular shining activities are conducted.</p>
5. Standardize 5S.	<p>5.1. Plan is prepared and used to standardize 5S activities.</p> <p>5.2. <b>Tools and techniques to standardize 5S</b> are prepared and implemented based on <b>relevant procedures</b>.</p> <p>5.3. Checklists are followed for standardize activities and <b>reported to relevant personnel</b>.</p> <p>5.4. The workplace is kept to the specified standard.</p> <p>5.5. Problems are avoided by standardizing activities.</p>
6. Sustain 5S.	<p>6.1. Plan is prepared and followed to sustain 5S activities.</p> <p>6.2. Tools and techniques to sustain 5S are discussed, prepared and implemented based on relevant procedures.</p> <p>6.3. Workplace is inspected regularly for compliance to specified standard and sustainability of 5S techniques.</p> <p>6.4. Workplace is cleaned up after completion of job and before commencing next job or end of shift.</p> <p>6.5. Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken.</p> <p>6.6. Improvements are recommended to lift the level of compliance in the workplace.</p> <p>6.7. Checklists are followed to sustain activities and report to relevant personnel.</p> <p>6.8. Problems are avoided by sustaining activities.</p>



Variable	Range
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legislation/Regulations/Codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.</li> <li>• Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.</li> <li>• Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization.</li> <li>• Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Paint</li> <li>• Hook</li> <li>• Sticker</li> <li>• Signboard</li> <li>• Nails</li> <li>• Shelves</li> <li>• Chip wood</li> <li>• Sponge</li> <li>• Broom</li> <li>• Pencil</li> <li>• Shadow board/Tools board</li> </ul>
Safety equipment and tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Dust masks/goggles</li> <li>• Glove</li> <li>• Working cloth</li> <li>• First aid and safety shoes</li> </ul>
Items	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Tools</li> <li>• Jigs/Fixtures</li> <li>• Materials/components</li> </ul>

	<ul style="list-style-type: none"> <li>• Machine and equipment</li> <li>• Manuals</li> <li>• Documents</li> <li>• Personal items (e.g. Bags, lunch boxes and posters)</li> <li>• Safety equipment and personal protective equipment</li> <li>• Other items which happen to be in the work area</li> </ul>
The appropriate procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Steps for implementing 5S (sort, set in order and shine) activities.</li> <li>• Written, verbal and computer based or in some other format.</li> </ul>
Unnecessary items	<p>Are not needed for current production or administrative operation and include but not limited to:</p> <ul style="list-style-type: none"> <li>• Defective or excess quantities of small parts and inventory</li> <li>• Out dated or broken jigs and dies</li> <li>• Worn-out bits</li> <li>• Out dated or broken tools and inspection gear</li> <li>• Old rags and other cleaning supplies</li> <li>• Electrical equipment with broken cords</li> <li>• Out dated posters, signs, notices and memos</li> <li>• Some locations where unneeded items tend to accumulate</li> <li>• In rooms or areas not designated for any particular purpose</li> <li>• In corners next to entrances or exists</li> <li>• Along interior and exterior walls</li> <li>• Next to partitions and behind pillars</li> <li>• Under the eaves of warehouses</li> <li>• Under desks and shelves and in desk and cabinet drawers</li> <li>• Near the bottom of tall stacks of items</li> <li>• On unused management and production schedule boards</li> <li>• In tools boxes that are not clearly sorted</li> </ul>
Appropriate format	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• All items, necessary and unnecessary items.</li> </ul>
Red tag	<p>A format prepared with a red color paper or card which is filled and attached temporarily on the unnecessary items until decision is made. The red tag catch people's attention because red is a color that stands out. So to fill and attach red tag on items, asks the following three questions:</p> <ul style="list-style-type: none"> <li>• Is this item needed?</li> <li>• If it is needed, is it needed in this quantity?</li> <li>• If it is needed, does it need to be located here?</li> </ul>
Necessary items	<p>Are required in the workplace for current production or administrative operation in the amount needed.</p>

Shine activity	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Inspection</li> <li>• Cleaning</li> <li>• Minor maintenance May include, but not limited to: <ul style="list-style-type: none"> <li>➤ Tightening bolts</li> <li>➤ Lubrication and Replacing missing parts</li> </ul> </li> </ul>
Tools and techniques to standardize 5S	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 5S Job Cycle Charts</li> <li>• Visual 5S</li> <li>• The Five Minute 5S</li> <li>• Standardization level checklist</li> <li>• 5S checklist</li> <li>• The five Whys and one How approach(5W1H)</li> <li>• Suspension</li> <li>• Incorporation and Use Elimination</li> <li>• 5S slogans</li> <li>• 5S posters</li> <li>• 5S photo exhibits and storyboards</li> <li>• 5S newsletter</li> <li>• 5S maps</li> <li>• 5S pocket manuals</li> <li>• 5S department/benchmarking tours</li> <li>• 5S months</li> <li>• 5S audit</li> <li>• Awarding system</li> <li>• Big cleaning day</li> <li>• Patrolling system May include, but not limited to: <ul style="list-style-type: none"> <li>➤ Top management Patrol</li> <li>➤ 5S Committee members and Promotion office Patrol</li> <li>➤ Mutual patrol</li> <li>➤ Self-patrol</li> </ul> </li> <li>• Checklist and Camera patrols</li> </ul>
Relevant procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Assign 5S responsibilities</li> <li>• Integrate 5S duties into regular work duties</li> <li>• Check on 5S maintenance level</li> <li>• OHS measures such as signage, symbols / coding and labelling of workplace and equipment</li> <li>• Creating conditions to sustain your plans</li> </ul>

	<ul style="list-style-type: none"> <li>• Roles in implementation</li> </ul>
Reporting	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal responses</li> <li>• Data entry into enterprise database</li> <li>• Brief written reports using enterprise report formats</li> </ul>
Relevant personnel	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Supervisors, managers and quality managers</li> <li>• Administrative, laboratory and production personnel</li> <li>• Internal/external contractors, customers and suppliers</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> <li>• Discuss how to organize KPT.</li> <li>• Describe the pillars of 5S.</li> <li>• Discuss the relationship between Kaizen elements.</li> <li>• Implement 5S in own workplace by following appropriate procedures and techniques.</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> <li>• Kaizen principle, pillars and concept</li> <li>• Key characteristic of Kaizen</li> <li>• Elements of Kaizen</li> <li>• Wastes/MUDA</li> <li>• Basics of KPT</li> <li>• Aims, benefits and principles of KPT</li> <li>• Stages of KPT</li> <li>• Structure and role of the components of Junior KPT</li> <li>• Concept and parts of Kaizen board</li> <li>• Concept and benefits of 5S</li> <li>• The pillars of 5S</li> <li>• Three stages of 5S application</li> <li>• Benefits and procedure of sorting activities</li> <li>• The concept and application of Red Tag strategy</li> <li>• Relevant Occupational Health and Safety (OHS) and environment requirements</li> <li>• Benefits and procedure of set in order activities</li> <li>• Set in order methods/techniques</li> <li>• Benefits and procedure of shine activities</li> <li>• Inspection methods</li> </ul>

	<ul style="list-style-type: none"> <li>• Planning and reporting methods</li> <li>• Method of Communication</li> <li>• Benefits of standardizing and sustaining 5S</li> <li>• Tools and techniques to sustain 5S</li> <li>• Ways to improve Kaizen elements</li> <li>• Benefits of improving kaizen elements</li> <li>• Relationship between Kaizen elements</li> </ul>
Required Skills	<p>Demonstrates skills of:</p> <ul style="list-style-type: none"> <li>• Participating actively in KPT</li> <li>• Technical drawing</li> <li>• Communication skills</li> <li>• Planning and reporting own tasks in implementation of 5S</li> <li>• Following procedures to implement 5S in own workplace</li> <li>• Using sorting formats to identify necessary and unnecessary items</li> <li>• Improving workplace layout following work procedures</li> <li>• Preparing labels, slogans, etc.</li> <li>• Reading and interpreting documents</li> <li>• Observing situations</li> <li>• Gathering evidence by using different means</li> <li>• Recording activities and results using prescribed formats</li> <li>• Working with others</li> <li>• Solving problems by applying 5S</li> <li>• Preparing and using kaizen board</li> <li>• Preparing and using tools and equipment to implement and sustain 5S</li> <li>• Improving Kaizen elements by applying 5S</li> <li>• Standardizing and sustaining procedures and techniques to avoid problems</li> <li>• Procedures to standardizing 5S activities</li> <li>• Analysing and preparing shop layout of the workplace</li> <li>• Standardizing and sustaining checklists</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

# Level III

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<b>Occupational Standard: Fishery and Aquaculture III</b>	
<b>Unit Title</b>	<b>Maintain water quality</b>
<b>Unit Code</b>	<a href="#"><u>AGR FAQ3 01 0722</u></a>
<b>Unit Descriptor</b>	This unit competency covers the knowledge, skills and attitude required to collect, taste, preserve, pack and label water samples for water quality maintaining. It also covers taking treatment measure based on test result.

<b>Element</b>	<b>Performance criteria</b>
1. Prepare for water quality maintaining	<p>1.1 <i>Tools, equipment</i> and materials required to maintain water quality are identified and ready for use</p> <p>1.2 Suitable <i>personal protective equipment</i> (PPE) is selected and checked prior to use</p> <p>1.3 <i>Water quality</i> and <i>environmental parameters</i> to be measured are identified.</p> <p>1.4 Water quality maintaining schedules are prepared.</p> <p>1.5 Water quality maintaining techniques are understood.</p> <p>1.6 Data or record sheets/books are collected and ready for use.</p>
2. Carry out sampling	<p>2.1. Water quality measurement tools and equipments are calibrated</p> <p>2.2. Sampling techniques are identified and applied</p> <p>2.3. Samples are collected for water quality test according to the sampling procedure</p> <p>2.4. Water sample are preserved, packed and labeled for laboratory test in accordance with enterprise procedures and laboratory requirements.</p>
3. Test and maintain water quality	<p>3.1. Water quality test are undertaken in according to working guidelines and procedures</p> <p>3.2. Detecting and interpreting test results for monitoring</p>

	<p>environmental parameters</p> <p>3.3. Test results and observations of physical characteristics of water are accurately recorded on data sheets.</p> <p>3.4. Results of test and Observation of physicochemical water quality are analyzed</p> <p>3.5. Undertaking <i>basic treatment measure</i> according on observation report</p>
4. Complete water quality maintaining activities	<p>4.1. Routine <i>water quality and environmental parameters</i> are recorded and reported for responsible body</p> <p>4.2. Tools, equipment and materials are cleaned, sanitized, repaired and stored in accordance with enterprise procedures.</p> <p>4.3. Malfunctioning tools and equipment is repaired on site or sent to manufacturer or specialist.</p> <p>4.4. Damaged tools, equipment and waste materials are discarded</p> <p>4.5. Leftover materials and chemicals are properly stored for reuse</p>

Variable	Range
Water quality and environmental parameters	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Dissolved oxygen</li> <li>• Hardness</li> <li>• Ammonia</li> <li>• Nitrite</li> <li>• Nitrate</li> <li>• Carbon dioxide</li> <li>• Alkalinity</li> <li>• Temperature</li> <li>• Salinity</li> </ul>



	<ul style="list-style-type: none"> <li>• Ph</li> <li>• Turbidity</li> <li>• Weather, rain, wind</li> <li>• Tides, water flow</li> <li>• Organisms in surrounding environment.</li> </ul>
Tools and Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Electronic machines</li> <li>• Probe, grab, test tube, sample kit,</li> <li>• Flux, sensitive balance</li> <li>• Scoop nets, dredge, traps, cages, plankton nets, water sample bottles</li> <li>• Micropipettes, microscope, secchi disk</li> <li>• Soil analysis kits</li> <li>• Spectrophotometer</li> <li>• Chlorinometer</li> <li>• PH meter</li> <li>• Thermometer</li> <li>• Refractometer.</li> <li>• Oxmeter</li> </ul>
Personal protective equipment ( PPE)	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Sunscreen creams</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>

Basic treatment measure	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• Bio filtration</li> <li>• Solid removal</li> <li>• Oxygenation</li> <li>• Ph control</li> <li>• Temperature control</li> <li>• Bio security</li> </ul>
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<b>Evidence Guide</b>	
<p>Critical aspects of Competency</p>	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Take water sample and test quality</li> <li>• Preserve, pack, label and Submit samples for external analyses.</li> <li>• Verify basic treatment measures</li> <li>• Understand the way how observations of physical characteristics of water are done</li> <li>• Understand Water quality and environmental parameters</li> <li>• Understand sampling techniques</li> <li>• Understand water quality measurement</li> <li>• Understand basic water treatment measure</li> <li>• Understand water sample preserving, packing and labeling methods</li> </ul>
<p>Required knowledge and attitude</p>	<p>Must demonstrate knowledge to:</p> <ul style="list-style-type: none"> <li>• Understand the way how observations of physical characteristics of water are done</li> <li>• Understand Water quality and environmental parameters</li> <li>• Understand sampling techniques</li> <li>• Understand water quality measurement</li> <li>• Understand basic water treatment measure</li> </ul>

	<ul style="list-style-type: none"> <li>• Understand water sample preserving, packing and labeling methods</li> <li>• Physical and chemical nature of pure water</li> <li>• Basic water quality tests</li> <li>• collect and submit samples for external analyses</li> <li>• Understand basic principles of maintain water quality</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Prepare water quality maintaining schedules</li> <li>• Collect and test samples for water quality test according to the sampling procedure</li> <li>• Preserve, pack and label water sample</li> <li>• Record and report water quality and environmental parameters</li> <li>• Undertake basic water treatment measure</li> <li>• Operate water quality maintaining equipment</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Fishery and aquaculture Level III	
Unit of competence	Establish fish farm
Unit Code	<a href="#">AGR FAQ3 02 0722</a>
Unit Descriptor	This unit of competency covers the required knowledge, skills and attitude to select site, establish fish farm and construct infrastructure facilities based on production plan of fish farm.

Elements of competence	Performance Criteria
1. Select site for fish farm establishment	<p>1.1. <i>Site selection criteria</i> are understood and identified</p> <p>1.2. Selection of site performed based on production plan</p> <p>1.3. Legal requirements and constraints on development processes are identified.</p> <p>1.4. Site preparation requirements are assessed and determined according to enterprise guidelines</p>
2. Prepare for construction work	<p>2.1. <i>Construction work plan</i> is prepared and undertaken to establish the farm</p> <p>2.2. <i>Types of pond is</i> identified to undertake construction</p> <p>2.3. Bill of quantity are set for construction</p> <p>2.4. <i>Personal Protective Equipment (PPE)</i> are identified and used for construction work</p> <p>2.5. Equipment, tools and materials are identified in the construction work</p> <p>2.6. Brief layout is prepared and undertaken to establish the farm</p>

3. Construct fish farm	<p>3.1 Equipment operation and work practices are conformed to <i>occupational health and safety</i> regulations</p> <p>3.2 Site are properly measured, cleaned and excavated based on the design plan</p> <p>3.3 Farm structures are positioned according to construction work plan.</p> <p>3.4 Fish farm are constructed according to the production plan</p> <p>3.5 <i>Fish farm infrastructures</i> are constructed according to farming procedures.</p> <p>3.6 <i>Water supply and disposal systems</i> are constructed and installed as indicated in the construction plan</p> <p>3.7 <i>Fixtures and fittings</i> are assembled and fixed according to construction plan.</p>
4. Complete construction work	<p>4.1 Checking and commissioning is undertaken to ensure that the finished product fits design specification.</p> <p>4.2 Equipment and material is cleaned, checked and returned to storage; waste and debris is disposed of in accordance with enterprise procedures</p> <p>4.3 Work reports are provided including any damage to tools and equipment, and any problems that may have arisen</p> <p>4.4 Documents are organized, documented and reported for the responsible body</p>

Variable	Range
Site selection criteria	<p>This may include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Soil type</li> <li>• market</li> <li>• Transport</li> <li>• Road</li> <li>• Topography</li> </ul>

	<ul style="list-style-type: none"> <li>• labor</li> <li>• Climatic factors (Temperature (low land, midland and high land), wind direction, humidity...)</li> </ul>
Construction work plan	<p>This may include but not limited:-</p> <ul style="list-style-type: none"> <li>• Construction activities</li> <li>• Order of activities</li> <li>• Construction or installation directions or design</li> <li>• Expected time required to complete activities</li> <li>• Standard of completed construction activities</li> <li>• Materials, tools and equipment required/arranged</li> <li>• Safety procedures.</li> </ul>
Types of pond	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Earthen pond</li> <li>• Concrete pond</li> <li>• Tarpaulin pond</li> <li>• plastic or rubber pond</li> <li>• Fiber glass tanks</li> <li>• Cage or pen ponds</li> </ul>
Personal Protective Equipment (PPE)	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• Sunhats</li> <li>• Helmets</li> <li>• sunglass</li> <li>• overalls</li> <li>• gloves</li> </ul>
Occupational health and safety	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Operating power tools and equipment</li> <li>• Using load shifting equipment</li> <li>• Manual handling</li> <li>• Using chemicals and/or toxic substances</li> </ul>

	<ul style="list-style-type: none"> <li>• Excavations</li> <li>• Exposure to sun</li> </ul>
Fish farm infrastructure	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Pond</li> <li>• Storage</li> <li>• Buildings</li> <li>• Fence and security system</li> <li>• Communication and electricity facilities</li> <li>• Aquaculture lab</li> <li>• Jetties</li> <li>• Tank</li> <li>• Pump</li> <li>• Tap water</li> <li>• Water supply and effluent system</li> </ul>
Stock culture structure	<p>may include but not limited to:</p> <ul style="list-style-type: none"> <li>• Enclosures and nets-holding, predator protection, handling and harvesting (dip, brails, traps, seines)</li> <li>• Fish on growing-long lines, rafts, racks, fences-socks, trays, baskets, tags, barrels, cages, panels, self-feeding cages</li> <li>• Floating structures cages /pens, long lines, rafts, moorings</li> <li>• Ponds, tanks, dams, race ways</li> <li>• Harvest stock holding structures–tanks, bins, cages</li> <li>• pest, predator and disease control structures</li> </ul>

<p>Water supply and disposal system (for closed or semi-closed structures only)</p>	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Intake structure support screens</li> <li>• Channels, canals, or trenches (can be earthen, concrete or plastic lined)</li> <li>• Road banks</li> <li>• Spill ways</li> <li>• Siphon, including reducing diameter pipes</li> <li>• Hose</li> <li>• Pipes (can be metal, PVC, rubber, concrete or polyethylene/polypropylene) pressure or sewage rating</li> <li>• Sumps</li> <li>• Pumps, bores, windmills</li> <li>• Storage dams or reservoirs</li> <li>• Sediment dams</li> <li>• Sprays</li> <li>• Flow meters, pressure gauges</li> <li>• Float switches, solenoids</li> <li>• Header tank</li> <li>• Settlement tank</li> <li>• Non-return mechanisms</li> <li>• Depth gauges</li> <li>• Sieves, filters or other mechanical, chemical or</li> <li>• Biological treatment structures</li> <li>• Flow control devices (taps, valves, float valves, monks, dykes, weirs, gates).</li> </ul>
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Fixtures and fittings	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Water supply and effluent system</li> <li>• Ropes, moorings and buoys</li> <li>• Pumps and water treatment equipment</li> <li>• Screens, predator control equipment</li> <li>• Feeders</li> <li>• Water quality monitors</li> <li>• Storage areas</li> <li>• Lighting and heating equipment.</li> </ul>
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<b>Evidence Guide</b>	
Critical Aspects of Competency	<p>Must demonstrate knowledge and skill to:</p> <ul style="list-style-type: none"> <li>• Select site based on production plan</li> <li>• Prepare construction work plan to establish the farm</li> <li>• Identify types of pond</li> <li>• Set bill of quantity for construction</li> <li>• Prepare and undertake layout</li> <li>• Construct and install water supply and disposal systems</li> <li>• Assemble and fix fixtures and fittings</li> <li>• Measure, clean and excavate site</li> <li>• Position and construct farm structures</li> </ul>
Required Knowledge and Attitudes	<p>demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Site selection based on production plan</li> <li>• Construction work plan preparation</li> <li>• Types of pond</li> <li>• Bill of quantity for construction</li> <li>• Layout preparation</li> <li>• Water supply and disposal systems</li> <li>• Fixtures and fittings</li> <li>• Measuring, cleaning and excavating site</li> <li>• Farm structures positioning and construction</li> </ul>

	<ul style="list-style-type: none"> <li>• Site selection criteria</li> <li>• Legal requirements and constraints on development processes</li> <li>• Document organizing and reporting</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Select site based on production plan</li> <li>• Prepare construction work plan to establish the farm</li> <li>• Identify types of pond</li> <li>• Set bill of quantity for construction</li> <li>• Prepare and undertake layout</li> <li>• Construct and install water supply and disposal systems</li> <li>• Assemble and fix fixtures and fittings</li> <li>• Estimate and measure length, area, volume</li> <li>• load shifting equipment including forklifts</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

<b>Occupational Standard: Fishery and aquaculture Level III</b>	
<b>Unit Title</b>	<b>Process and utilize fish by-products</b>
<b>Unit code</b>	<a href="#"><u>AGR FAQ3 03 0722</u></a>
Unit descriptor	This unit of competency covers the skills, knowledge and attitude required to process and utilizes fish by products, fish by product processing techniques and steps, grinding, packing, storage and transportation of fish meal.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare work area for processing and utilizing	<p>1.1. Processing <i>tools, equipment</i> and <i>materials</i> are identified and organized.</p> <p>1.2. Types of fish byproducts are identified and understood</p> <p>1.3. The <i>fish byproduct sources</i> are identified</p> <p>1.4. <i>Fish byproduct processing techniques</i> and <i>steps</i> are understood.</p> <p>1.5. The <i>use of fish byproduct</i> are identified and determined.</p> <p>1.6. The fish byproducts are collected</p> <p>1.7. Occupational health and safety(OHS) procedures and safe working practice are applied including the selection of <i>persona protective equipment</i> (PPE)</p> <p>1.8. Unsafe and inefficient aspects of the work area are identified and rectified.</p>
2. Process fish byproduct	<p>2.1. Large fish and byproducts are grinded or hashed</p> <p>2.2. The fish byproducts are cooked and heated by using a steam.</p> <p>2.3. Pressing (or occasional centrifugation) are conducted to remove a large fraction of the liquids from the mass.</p> <p>2.4. The press cake is dried.</p> <p>2.5. The dried meals are grinded, sifted and packed.</p> <p>2.6. Storage and transport of fish meals are performed according to organizational procedures and standards</p>

3.Complete fish by product processing activities	<p>3.1. <b>Waste material</b> produced during fish byproduct processing is handled according to rules and regulations</p> <p>3.2. Material, Tools, equipment and machinery are cleaned, maintained, handled, transported and stored according to the industry guidelines.</p> <p>3.3. Work outcomes are recorded and documented</p>
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Variable	Range
tools, equipment and materials	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fish Cutting Machine</li> <li>• Screw Conveyor</li> <li>• Steam Cooking Machine</li> <li>• Presser Machine for Fishes after Stewing</li> <li>• Oil-water Separator Machine</li> <li>• Chain-drive Steam Drying Machine</li> <li>• Heat Transfer Oil System</li> <li>• Crushing Machine</li> <li>• Sacks</li> <li>• Pelleting machine</li> </ul>
Personal protective equipment (PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Sunscreen</li> <li>• Aprons</li> <li>• Gloves</li> <li>• Safety eyewear</li> <li>• Waders</li> <li>• Safety shoes</li> <li>• Nose protector</li> <li>• Helmet</li> </ul>
Fish by product sources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Post-harvest fish loss and fish wastes</li> </ul>

	<ul style="list-style-type: none"> <li>• Fish processing factory wastes</li> <li>• processing wastes</li> <li>• Fish market wastes</li> <li>• Fish waste mainly consists of offal, head and tails collected by the eviscerating, cutting, and filleting processes.</li> <li>• Skins, bones and blood.</li> </ul>
Fish byproduct processing techniques and steps	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Grinding</li> <li>• Cooking</li> <li>• Pressing</li> <li>• Decanting</li> <li>• Centrifugation</li> <li>• Evaporation</li> <li>• Mixing</li> <li>• Drying</li> <li>• Additives</li> <li>• Packaging</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Waste water</li> <li>• derbies</li> </ul>
use of fish byproduct	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal feed</li> <li>• pet feed</li> <li>• plant fertilizer</li> <li>• glue</li> <li>• Cosmetics</li> <li>• oils</li> </ul>

Evidence Guide			
Critical Competence	Aspects of	Demonstrate the skill and knowledge of: <ul style="list-style-type: none"> <li>• Understand types of fish by products</li> <li>• Identify the fish by product sources</li> <li>• Collect the fish by products</li> </ul>	
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	<ul style="list-style-type: none"> <li>• Assess and understand the existing status and utilization of fish by products</li> <li>• Understand fish meal preparation techniques and steps</li> <li>• Grind and hash the fish by products</li> <li>• Grind and pack the dry fish meals</li> <li>• Handle Waste material produced during processing</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Fish meal preparation techniques and steps</li> <li>• by products are grinding or hashing</li> <li>• Techniques of grinding and packing fish meal.</li> <li>• Fish waste handling</li> <li>• Fishing safety procedures</li> </ul>
Required skills	<p>Demonstrate skill of:</p> <ul style="list-style-type: none"> <li>• Grinding or hashing by products</li> <li>• Grinding and packing fish meal.</li> <li>• Fish waste handling</li> <li>• Fishing safety procedures</li> <li>• Identify the fish by product sources</li> <li>• Collect the fish by products</li> <li>• Fish by products process techniques</li> <li>• Handle Waste material produced during processing</li> </ul>
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Fishery and Aquaculture	
Unit of Competence	Apply aquaculture bio-security measures
Unit code	<a href="#">AGR FAQ3 04 0311</a>
Unit descriptor	This unit of competency covers the skills, knowledge and attitude required to identify fish diseases, pests and predators and apply bio-security control and treatment measures.

Elements of Competence	Performance criteria
1. Identify biosecurity control measures	<p>1.1. Organisation aquaculture biosecurity plan are accessed</p> <p>1.2. Identify <i>fish diseases , pests and predators</i> that are considered as biosecurity threats</p> <p>1.3. Materials, tools and equipment are identified</p> <p>1.4. Appropriate <i>personal protective clothing and equipment</i> are identified.</p> <p>1.5. <i>Hazard and risk</i> control procedures are identified</p> <p>1.6. <i>Control measures</i> are identified to minimise the risk</p>
2. Apply biosecurity control measures	<p>2.1. <i>Control measures</i> related to transmission routes onto, within and from the aquaculture farm are applied</p> <p>2.2. Control measures related to movement of vectors of disease into, out of and within the aquaculture farm are applied</p> <p>2.3. Control measures related to farm production practices are applied</p> <p>2.4. Control measures into own work routines and others of responsibility are incorporated</p> <p>2.5. <i>Treatment measures</i> are identified and applied</p>
3. Maintain records and monitor biosecurity procedures	<p>3.1. Records of stock are ensured and equipment are kept for traceability of farm inputs and farm outputs according to own work responsibility</p> <p>3.2. Monitoring and surveillance data retained</p> <p>3.3. The effectiveness of control measures in addressing risks are monitored</p>

	<p>3.4 Work duties of self and others are monitored to ensure biosecurity control measures are applied appropriately</p> <p>3.5 Issues and concerns with biosecurity are reported to senior personnel</p>
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<b>Variables</b>	<b>Range</b>
Predators and pests	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Alligator and crocodile</li> <li>• Human (poachers)</li> <li>• Snakes, python</li> <li>• Amphibians, otter, reptiles, birds,</li> <li>• Water plants and microalgae</li> <li>• Weeds.</li> <li>• Blowfly, maggots ,lice, leeches</li> </ul>
Personal Protective Clothing and Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves,</li> <li>• Boots</li> <li>• Footbath</li> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>
<i>Fish Diseases</i>	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Viral, bacteria, fungal, worms, parasites, protozoa, leeches</li> <li>• Toxicants (chemicals), toxins of biological origin (such as toxic algae) symbionts.</li> </ul>
Hazard and risk	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Hazard <ul style="list-style-type: none"> <li>✓ Physical</li> <li>✓ Chemical</li> <li>✓ Biological</li> </ul> </li> <li>• Risk <ul style="list-style-type: none"> <li>✓ Drought</li> <li>✓ Flood</li> <li>✓ Earthquake</li> </ul> </li> </ul>



Control measures:	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Apply good fish husbandry practice</li> <li>• Cleaning and disinfection of fish farm</li> <li>• Elimination (shooting or chemical poisoning)</li> <li>• Deterrence (traditional, biological or environmental)</li> <li>• Capture and relocation</li> <li>• Exclusion.</li> </ul> <p>Predator control methods</p> <ul style="list-style-type: none"> <li>• Firearms and power heads</li> <li>• Air guns and other auditory measures</li> <li>• Scare lines and kites</li> <li>• Traps</li> <li>• Netting, fences and exclusion devices, barriers (mechanical, electrical)</li> <li>• Biological (such as hawks, dogs)</li> <li>• Human activity</li> <li>• Cleaning and disinfection of fish farm</li> </ul> <p><i>Pest control methods</i></p> <ul style="list-style-type: none"> <li>• Exclusion</li> <li>• Filtration and ozonation</li> <li>• Biological control (such as cleaner fish)</li> <li>• Chemical control.</li> </ul> <p><i>Disease control methods</i></p> <ul style="list-style-type: none"> <li>• Bathing (fresh or salt water)</li> <li>• Chemical baths</li> <li>• Medication in food</li> <li>• Vaccination</li> <li>• Biological, probiotics</li> <li>• Chemical barriers (foot baths etc)</li> <li>• Disinfection of equipment</li> <li>• Deprivation/purging</li> <li>• Filtration</li> <li>• Replace susceptible species with resistant species</li> <li>• Reduce stress..</li> </ul>
Treatment measure	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Water treatment</li> <li>• Liming</li> <li>• Antibiotic treatment</li> </ul>

<b>Evidence Guide</b>		
Critical aspects of competence	of	<p>Demonstrate the skill and knowledge of:</p> <ul style="list-style-type: none"> <li>• Understand and identify fish diseases , pests and predators</li> <li>• Identify hazard and risk control procedures</li> <li>• Apply control measures related to transmission routes onto, within and from the aquaculture farm</li> <li>• Identify and apply treatment measures</li> <li>• Apply control measures related to movement of vectors of disease into, out of and within the aquaculture farm</li> <li>• Apply control measures related to farm production practices are applied</li> <li>• Incorporate Control measures into own work routines and others of responsibility</li> </ul>
Required Knowledge and Attitudes	and	<p>Demonstrate knowledge and Attitude of:</p> <ul style="list-style-type: none"> <li>• Fish diseases , pests and predators that are considered as biosecurity threats</li> <li>• Hazard and risk control procedures</li> <li>• Fish diseases , pests and predators control measures to minimise the risk</li> <li>• Monitoring and surveillance data retained</li> <li>• Treatment measures</li> <li>• Control measures related to transmission routes onto, within and from the aquaculture farm</li> <li>• Control measures related to movement of vectors of disease into, out of and within the aquaculture farm</li> <li>• Control measures related to farm production practices</li> <li>• Regulatory requirements for aquaculture biosecurity</li> <li>• Aquaculture biosecurity risk analysis</li> <li>• Record keeping for traceability (both trace back and trace forward) of farm inputs and outputs</li> </ul>

	<ul style="list-style-type: none"> <li>• Record keeping for retention of monitoring and surveillance data</li> <li>• Processes for monitoring effectiveness of control measures</li> <li>• Process for reporting biosecurity concerns and issues.</li> </ul>
Required skills	<p>Demonstrate skill to:</p> <ul style="list-style-type: none"> <li>• Identify fish diseases , pests and predators</li> <li>• Identify hazard and risk control methods and procedures</li> <li>• Apply control measures related to transmission routes onto, within and from the aquaculture farm</li> <li>• Apply treatment measures</li> <li>• Apply control measures related to movement of vectors of disease into, out of and within the aquaculture farm</li> <li>• Apply control measures related to farm production practices are applied</li> <li>• Incorporate Control measures into own work routines and others of responsibility</li> <li>• Monitor and retain surveillance data</li> <li>• Monitor the effectiveness of control measures in addressing risks</li> <li>• Assess organisation aquaculture biosecurity plan are accessed</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational standard: Fishery and Aquaculture Level III</b>	
<b>Unit Title</b>	<b>Perform fish postharvest handling</b>
<b>Unit code</b>	<a href="#"><u>AGR FAQ3 05 0322</u></a>
<b>Unit descriptor</b>	This unit covers the skills, knowledge and attitude required to handle postharvest fish on boats, landing sites, fish farm premises, and in processing plant.

<b>Element</b>	<b>Performance Criteria</b>
1. prepare for fish postharvest handling	<p>1.1. Plan for post harvest handling are prepared based on <i>post harvest handling techniques</i></p> <p>1.2. Availability of suitable storage and facilities for harvested fish are confirmed</p> <p>1.3. <i>Tools, materials, equipment and machines</i> are selected, calibrated.</p> <p>1.4. <i>Risk factors</i> that affects the quality of harvested fish are identified</p> <p>1.5. <i>Occupational health and safety(OHS)</i> procedures and safe working practice are applied including the selection of <i>personal protective equipment (PPE)</i></p> <p>1.6. Clean work area before starting and maintain hygienic conditions throughout operations.</p>
2. Perform fish postharvest handling on boat	<p>2.1. Fish are visually inspected for any signs of <i>spoilage, defects, parasites and defective</i> fish are identified and set aside.</p> <p>2.2. Removal of gill and gut of large fish are undertaken</p> <p>2.3. Care the fish from mechanical injuries are applied</p> <p>2.4. The fish are kept on appropriate container</p> <p>2.5. The fish are laid belly downward</p> <p>2.6. Boat deck, fish hold, container, bucket, cutting utensils, ice box, etc. are washed and cleaned with chlorinated water</p>

	<p>2.7. The fish is handled with icebox and use proper ice ratio with fish</p> <p>2.8. The temperature of fish is monitored with a thermometer.</p> <p>2.9. Fish are protected from contamination through appropriate placing the fish on boat.</p> <p>2.10. Post mortem change of fish are understood</p> <p>2.11. <i>Causes of fish spoilage</i> are identified</p>
3 Handle during landing and transportation	<p>3.1. Fishes are properly handled while unloading to landing sites</p> <p>3.2. Insulated or refrigerators trucks on land transportation are used</p> <p>3.3. Fish are transport on time as organization guideline</p> <p>3.4. Fish are moved through each stage without delay and control the time taken in each stage.</p> <p>3.5. Offal's are handled and disposed appropriately and <i>Waste materials</i> produced during cleaning/gutting and filleting work clean appropriately dispose.</p> <p>3.6. Record keeping is carried out about postharvest handling.</p> <p>3.7. The fish postharvest handling shall follow and respect the <i>food safety and hygiene regulations and procedure</i></p> <p>3.8. Gutted and filleted fishes are packed with polyethylene bag</p> <p>3.9. Gutted and filleted fishes are properly freeze and stored with proper temperature</p>

Variable	Range
Post harvest handling techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Pre cooling</li> <li>• Cleaning/gutting and galling</li> <li>• Sorting and grading</li> <li>• Transportation</li> <li>• Packing</li> <li>• Storage</li> </ul>

Causes of fish spoilage	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Enzymatic</li> <li>• Chemical</li> <li>• Bacterial</li> <li>• contamination</li> </ul>
Spoilage, defects, parasites and defective	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Consistency of muscle flesh</li> <li>• Scale consistency and skin colour</li> <li>• Appearance of eye</li> <li>• Gill color</li> <li>• Consistency of belly</li> <li>• Mechanical injuries</li> <li>• Parasite infestation on the external and internal</li> </ul>
Materials, tools, equipment and machines	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Ice</li> <li>• Electric generators</li> <li>• Outboard and inboard boats</li> <li>• Cleaning/gutting knives</li> <li>• Cleaning/gutting table</li> <li>• Fish boxes and tubs</li> <li>• Weighing balance</li> <li>• deboning machines</li> <li>• fish cleaning troughs for washing and icing</li> <li>• Ice boxes</li> <li>• Plastic fish handling boxes</li> <li>• Hand cart</li> <li>• Ice machines</li> <li>• Chiller</li> </ul>

Food safety and hygiene regulations and procedures	<p>May include, but not limited to:</p> <p>Ethiopian quality inspection standard, Export Control (Fish) orders HACCP</p> <ul style="list-style-type: none"> <li>• hygiene and sanitation requirements</li> <li>• Primary Products Standard and the Ethiopian fish food Standard</li> <li>• Requirements set out in Ethiopian or Food Standards Code of conduct.</li> </ul>
Personal protective equipment (PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves, mitts or gauntlets, and protective hand and arm covering</li> <li>• Insulated protective clothing for chiller or refrigeration unit</li> <li>• Non-slip and waterproof boots (gumboots) or other safety foot wear</li> <li>• Protective hair, beard and boot covers</li> <li>• Uniforms, overalls or protective clothing (e.g. Mesh and water proof aprons.)</li> <li>• Overcoat</li> <li>• Plastic boots</li> <li>• Gown</li> <li>• Face mask</li> </ul>
Occupational health and safety(OHS)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Workplace environment and safety handling of materials, tools and equipment</li> <li>• Use of firefighting equipment and industry first aid kits,</li> <li>• Following OHS procedure to control hazard and hazardous materials/substances</li> <li>• Following OHS procedures designated for the task accomplished.</li> <li>• Checking and fulfilling required safety devices before starting operation</li> </ul> <p>Apply safe operating procedures regarding:</p> <ul style="list-style-type: none"> <li>➤ Electrical safety,</li> <li>➤ Machinery movement and operation,</li> <li>➤ Manual and mechanical lifting and shifting,</li> </ul> <ul style="list-style-type: none"> <li>• Apply emergency procedures: <ul style="list-style-type: none"> <li>➤ Emergency shutdown and stopping of equipment</li> <li>➤ Using extinguishing fires</li> <li>➤ First aid application and site evacuation.</li> </ul> </li> </ul>

Risk factors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Road</li> <li>• Transport</li> <li>• Market</li> <li>• Storage system</li> <li>• Infrastructure</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Head and guts,</li> <li>• Bone and meat scraps/derbies</li> <li>• Blood</li> <li>• Cleaning sewerage</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Prepare post harvest handling based on post harvest handling techniques</li> <li>• Identify risk factors</li> <li>• Identify signs of spoilage, defects, parasites and defective fish</li> <li>• Undertake removal of gill and gut of large fish</li> <li>• Apply fish care, keep fish on the appropriate container</li> <li>• Lay the fish belly downward</li> <li>• Wash and clean boat deck, fish hold, container, bucket, cutting utensils, ice box, etc. With chlorinated water</li> <li>• Handle the fish with icebox and use proper ice ratio with fish</li> <li>• Understand post mortem change of fish</li> <li>• Identify causes of fish spoilage</li> <li>• clean and handle waste materials</li> </ul>



Required Knowledge	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Post harvest handling based on post harvest handling techniques</li> <li>• Risk factors</li> <li>• I signs of spoilage, defects, parasites and defective fish</li> <li>• Removal techniques of gill and gut of large fish</li> <li>• Fish care techniques and keep fish on the appropriate container</li> <li>• Washing and cleaning boat deck, fish hold, container, bucket, cutting utensils, ice box, etc. With chlorinated water</li> <li>• Handling the fish with icebox and use proper ice ratio with fish</li> <li>• Understand post mortem change of fish are understood</li> <li>• Causes of fish spoilage</li> <li>• Waste materials handling</li> <li>• Temperature handled of postharvest fish</li> <li>• Ice ratio with fish</li> <li>• Understand fish postharvest handling equipment</li> <li>• Understand fish species and parts, including gills, gonads, scales, roe, kidneys and swim bladder</li> <li>• Understand chemical composition of fish different fish species</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Prepare post harvest handling based on post harvest handling techniques</li> <li>• Identify risk factors</li> <li>• Identify signs of spoilage, defects, parasites and defective fish</li> <li>• Undertake removal of gill and gut of large fish</li> <li>• Apply fish care, keep fish on the appropriate container</li> <li>• Lay the fish belly downward</li> <li>• Wash and clean boat deck, fish hold, container, bucket, cutting utensils, ice box, etc. With chlorinated water</li> <li>• Handle the fish with icebox and use proper ice ratio with fish</li> <li>• Identify causes of fish spoilage</li> </ul>

	<ul style="list-style-type: none"> <li>• Clean and handle waste materials</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> <li>• Skills must be demonstrated in a fish processing workplace or an environment that accurately represents workplace conditions</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and aquaculture level III	
Unit of competence	Produce algal and live-feed cultures
Unit Code	<a href="#">AGR FAQ3 06 0722</a>
Unit Descriptor	This unit of competency covers knowledge skill, attitude to produce algal and live-feed cultures including preparation of algae and live-feed production and to harvest culture for fish feed.

Element	Performance Criteria
1. Prepare for algae and live-feed production	<p><b>1.1. Production schedule</b> is prepared</p> <p>1.2. <b>Tools, materials and equipment</b> are prepared for algae production, and live feed.</p> <p>1.3. Labour and resource requirements for production are confirmed</p> <p>1.4. Suitable <b>personal protective equipment</b> (PPE) is selected and checked according to occupational health safety(OHS) guideline</p> <p>1.5. Risk factors that could affect the quality of the culture during production are identified and plans are made to minimise risk.</p> <p>1.6. Efficient culture systems are assembled and commissioned for use.</p>
2. Undertake algal and live-feed cultures	<p>2.1 Production vessels or structures and other equipment are checked for serviceability</p> <p>2.2 <b>Water treatment</b> is performed to meet the <b>physic-chemical requirements</b> of the culture organism.</p> <p>2.3 Sterile conditions and equipment are maintained in parent and stock cultures.</p> <p>2.4 <b>Inoculation cultures</b> to meet the required stocking density are readied for use.</p> <p>2.5 <b>Nutrient formulae or media</b> are prepared in accordance with enterprise procedures.</p> <p>2.6 <b>Culture health</b> is checked regularly by sampling the culture water and appropriate action is taken to achieve the</p>

	<p>production schedule.</p> <p>2.7 Production activities and equipment operations are supervised and monitored to ensure consistency with production schedule, operational guidelines and occupational health and safety (OHS) requirements.</p>
3. Harvest culture	<p>3.1. Harvesting equipment is collected and checked for serviceability in accordance with enterprise procedures.</p> <p>3.2. Substandard equipment is repaired or replaced to enterprise procedures and manufacturers' guidelines.</p> <p>3.3. The required quantity of algal and live culture are collected and transported to feed fish</p>
4. Complete culture production activities	<p>4.1 Production vessel is refilled with preconditioned water and nutrients</p> <p>4.2 Clean up of work area, repairs and storage of equipment is supervised and condition are reported.</p> <p>4.3 Unused cultures and <i>wastes</i> are treated and disposed of according to <i>ecologically sustainable development (ESD) principles</i>.</p> <p>4.4 Relevant culture production data, observations or information are recorded legibly and accurately and any out of range or unusual records are checked, reported and communicated.</p>

Variable	Range
Production schedule	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• production vessel or structure to use</li> <li>• production method: <ul style="list-style-type: none"> <li>- batch</li> <li>- semi-continuous</li> <li>- continuous</li> <li>- other</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• type of cultures, including species, sizes and ages</li> <li>• quantities (i.e. cells/ml, organisms/ml)</li> </ul> <p>quality, including bacteria free, growth rate and size or age.</p>
Personal Protective Equipment ( PPE)	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• sunhats</li> <li>• sunglass</li> <li>• sunscreen creams</li> <li>• overalls</li> <li>• raincoat</li> <li>• wader</li> </ul> <p>Life saver jacket</p>
Tools, materials and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Glass ware</li> <li>• Fibre glass or plastic tanks</li> </ul>

	<ul style="list-style-type: none"> <li>• aeration</li> <li>• lights</li> <li>• temperature- controlled room.</li> <li>• Measuring cylinder</li> <li>• pipettes and syringes</li> <li>• Washing and sterilizing equipments</li> <li>• Filtration</li> <li>• Microscope</li> <li>• Uckets</li> <li>• Pumps</li> <li>• Siphons</li> <li>• Nets, sieves or screens (mesh size generally below 100µm)</li> </ul> <p>scoops</p> <ul style="list-style-type: none"> <li>• Autoclave</li> </ul>
Water treatment	<p>May include but not limited to:</p>

	<ul style="list-style-type: none"> <li>• ozone</li> <li>• preconditioning (left to stand with aeration)</li> <li>• micro-filtration</li> <li>• aeration</li> <li>• chemical (change pH, hardness)</li> <li>• heating or cooling.</li> </ul>
Physio-chemical requirements	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• Mechanical or biological filtration</li> <li>• Dissolved oxygen</li> <li>• The temperature</li> <li>• Salinity</li> <li>• pH</li> <li>• Water flow</li> <li>• Carbon dioxide</li> <li>• light</li> <li>• Nutrient formulae or media.</li> </ul>
Inoculation cultures	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• various species of micro-algae</li> <li>• rotifers</li> <li>• copepods</li> <li>• Daphnia</li> <li>• Artemia and Parartemia</li> <li>• zooplankton</li> <li>• mosquitos, beetles or other insects</li> <li>• polychaetes</li> <li>• nematodes</li> </ul>
Nutrient formulae or media	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• Nutrients, fertilizers or other chemicals</li> <li>• Feeds, including micro-algae, pellets, powders and emulsions</li> <li>• Enrichment formulae.</li> </ul>

Culture health	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Density of organisms (I.e. Numbers per litre or millilitre)</li> <li>• Swimming activity</li> <li>• Feeding activity</li> <li>• Growth and appearance</li> <li>• Contaminants, including ciliates, males in rotifer cultures and unwanted species in micro-algal cultures., seedlings.</li> </ul>
Wastes	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Dead organisms</li> <li>• Uneaten nutrients</li> <li>• Derbies</li> </ul>
Ecologically sustainable development (ESD) principles.	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Reducing contaminants</li> <li>• Prevent live culture organisms being introduced into the environment</li> <li>• Disposing of waste materials</li> </ul>

### Evidence Guide

Critical Aspects of Competence	<p>A candidate must be able to demonstrate the ability to:</p> <ul style="list-style-type: none"> <li>• prepare Production schedule</li> <li>• Identify risk factors that could affect the quality of the culture</li> <li>• Use culture systems and assemble</li> <li>• Understand production vessels or structures</li> <li>• Perform Water treatment to meet the physic-chemical requirements</li> <li>• understand Inoculation cultures to meet the stocking density</li> <li>• prepare nutrient formulae and culture media</li> <li>• Culture health to achieve the production.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Collect and transport required quantity of algal and live culture</li> <li>• Treat and dispose <i>wastes</i></li> <li>• treat culture water</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrate knowledge to:</p> <ul style="list-style-type: none"> <li>• Prepare schedule</li> <li>• Water treatment to meet the physic-chemical requirements</li> <li>• prepare nutrient formulae and culture media</li> <li>• Culture health to achieve the production.</li> <li>• Collect and transport required quantity of algal and live culture</li> <li>• Treat and dispose <i>wastes</i></li> <li>• Treat culture water</li> <li>• Inoculation culture required to achieve stocking density</li> <li>• Nutrient formulae or media requirements for species during culture period.</li> <li>• Understand way of communication</li> </ul>
Required Skills	<p>Demonstrate skill to:</p> <ul style="list-style-type: none"> <li>• prepare Production schedule</li> <li>• Perform Water treatment to meet the physic-chemical requirements</li> <li>• prepare nutrient formulae and culture media</li> <li>• Culture health to achieve the production.</li> <li>• Collect and transport required quantity of algal and live culture</li> <li>• Treat and dispose wastes</li> <li>• Treat culture water</li> <li>• Apply communication skills</li> <li>• organize documents and report</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information



	on workplace practices and OHS practices.
Methods of Assessment	Competence may be accessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard : Fishery and Aquaculture Level III	
Unit Title	Apply Agricultural Extension service for Rural development
Unit Code	<a href="#">AGR FAQ3 07 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to promote the use of digital technology agricultural extension, understand adult learning, Integrated gender agricultural extension and Recognize Indigenous Knowledge

Element	Performance Criteria
1. Promote the use of digital technology in Agricultural Extension	<p>1.1 The <i>use of Digital technology in Agricultural extension</i> is introduced to familiarize its importance</p> <p>1.2 <i>Skills in using digital technology</i> is built to strengthen agricultural extension services</p> <p>1.3 The <i>role of digital technologies in agricultural extension</i> services is understood to enhance agricultural development.</p>
2. Understand Adult Learning	<p>2.1 The <i>concept of adult learning</i> is understood to bring behavioral changes</p> <p>2.2 <i>Principles of Adult learning</i> is determined for the implementation of extension services</p> <p>2.3 The <i>importance of Adult learning</i> in Agricultural Extension is understood to enhance agricultural extension services</p> <p>2.4 <i>Adult learning methods</i> are understood to enhance the knowledge and skills of extension beneficiaries</p> <p>2.5 <i>The role of adult learning</i> is understood to allow farmers develop knowledge and skills</p>
3. Integrate Gender in Agricultural Extension	<p>3.1 The <i>concept of gender</i> is understood to provide inclusive agricultural extension services</p> <p>3.2 Gender awareness and sensitization is created to increase the contribution of gender in agricultural development</p> <p>3.3 The <i>role of gender in agriculture</i> is determined to enhance agricultural development.</p>

	<b>3.4 Gender mainstreaming</b> is implemented for effective outcome of extension services
4. Recognize Indigenous Knowledge	<p>4.1. The <b>concept of indigenous knowledge</b> is understood to strengthen the service of agricultural extension</p> <p>4.2. <b>Characters of indigenous knowledge</b> are understood to promote local experience</p> <p>4.3. <b>Exchange of indigenous knowledge</b> is promoted to enhance community development</p> <p>4.4. The <b>importance of indigenous knowledge</b> is understood to facilitate its contribution to the development processes.</p> <p>4.5. The <b>controversial issues of the debate on indigenous knowledge</b> are further studied to propose the urgent need, to document, learn, preserve, and exchange indigenous knowledge</p>

Variable	Range
Use of Digital technology in Agricultural extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Define Digital Technology</li> <li>• Evolution and progress of digital technologies</li> <li>• Digital technology for Agricultural Extension</li> <li>• Tools for digital technology</li> <li>• Utilization of digital technologies</li> </ul>
Skills in using digital technology	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Demonstrate digital technologies</li> <li>• Practice digital technologies</li> <li>• Apply digital technologies</li> <li>• Maintain and manage digital technologies</li> </ul>
Role of digital technologies in agricultural extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Provide diverse knowledge to beneficiaries</li> <li>• Supply Efficient information products</li> <li>• Provide technology-related advice</li> <li>• provide location-specific market information</li> <li>• enhance technology adoption in agriculture</li> </ul>

Concept of adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Adult learning theories</li> <li>• Characteristics</li> <li>• Adult learning approaches</li> <li>• Purpose of Adult learn</li> <li>• Adult learning practices</li> </ul>
Principles of Adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Self-directed</li> <li>• Experiential</li> <li>• Problem-centered</li> <li>• Motivated to learn</li> <li>• Learner oriented</li> <li>• Practice Oriented</li> <li>• looks for help and mentorship</li> <li>• Open for modern ways of learning</li> <li>• Choose how to learn</li> </ul>
Importance of Adult learning	<p>May include but not limited to;</p> <ul style="list-style-type: none"> <li>• Increase effective participation in decision making</li> <li>• Improves individuals' technology utilization</li> <li>• Enhances working efficiency,</li> <li>• Keep up with the growing economic competition</li> <li>• Self-improvement</li> <li>• Financial growth and benefit</li> </ul>
Adult learning methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Visual Aids</li> <li>• Audio</li> <li>• Print Media</li> <li>• Tactile</li> <li>• Interactive</li> </ul>
The role of adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Behavioral change</li> <li>• Enhance to acquire new skills and knowledge</li> <li>• Access disadvantaged groups</li> <li>• Promote Participatory decision making</li> <li>• increase experience sharing</li> </ul>

Concept of gender	May include but not limited to: <ul style="list-style-type: none"> <li>• Definition of Gender</li> <li>• Historical development of Gender</li> <li>• Importance of Gender</li> <li>• Gender awareness and sensitization</li> </ul>
Role of gender in agriculture	May include but not limited to: <ul style="list-style-type: none"> <li>• Women’s contribution in Agricultural Production</li> <li>• Women’s participations in rural labor market</li> <li>• Women’s participation in Agricultural Extension</li> <li>• Gender difference in rural labor markets</li> <li>• Impact of gender role in Agricultural Extension services</li> </ul>
Gender mainstreaming	May include but not limited to: <ul style="list-style-type: none"> <li>• Understanding of gender equality</li> <li>• Mainstreaming strategy</li> <li>• Steps of gender mainstreaming</li> </ul>
Concept of indigenous knowledge	May include but not limited to: <ul style="list-style-type: none"> <li>• Definition of Indigenous knowledge</li> <li>• Historical development of indigenous knowledge</li> <li>• Importance of indigenous knowledge for development processes</li> </ul>
Characters of indigenous knowledge	May include but not limited to: <ul style="list-style-type: none"> <li>• Experiences</li> <li>• its compatibility with indigenous environment and culture</li> <li>• insufficient knowledge of rural people</li> <li>• combination of culture, belief and religion</li> </ul>
Exchange of indigenous knowledge	May include but not limited to: <ul style="list-style-type: none"> <li>• Recognition and identification</li> <li>• Validation of indigenous knowledge</li> <li>• Recording and document indigenous knowledge</li> <li>• Storage in retrievable repositories</li> <li>• Dissemination of indigenous knowledge</li> <li>• Utilization of indigenous knowledge</li> </ul>

Importance of indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Problem solving strategies</li> <li>• Important component of global knowledge</li> <li>• Resource in the development processes</li> <li>• Understanding of local conditions</li> <li>• Increase responsiveness of client</li> <li>• <u>Enhance cross cultural understanding</u></li> </ul>
Controversial issues of the debate on indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Discrimination,</li> <li>• Exploitation,</li> <li>• Dispossession</li> <li>• Miss-Used And</li> <li>• Miss- Appropriation</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge attitude and skill to:</p> <ul style="list-style-type: none"> <li>• Use of Digital technology in Agricultural extension</li> <li>• Applies the role of digital technologies in agricultural extension</li> <li>• Implements Adult learning methods</li> <li>• Implements Gender mainstreaming</li> <li>• Facilitates the Exchange of indigenous knowledge</li> <li>• Understands the controversial issues of the debate on indigenous knowledge</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge of -</p> <ul style="list-style-type: none"> <li>• Understands concept of adult learning</li> <li>• Recognize the Principles of Adult learning</li> <li>• Appreciates the importance of Adult learning</li> <li>• Understands the concept of gender</li> <li>• Understands the concept of indigenous knowledge</li> <li>• Understand the Characters of indigenous knowledge</li> <li>• Appreciates the importance of indigenous knowledge</li> <li>• Understands the controversial issues of the debate on indigenous knowledge</li> </ul>
Required Skills	Demonstrates skills:

		<ul style="list-style-type: none"> <li>• Demonstrates the use of Digital technology in Agricultural extension</li> <li>• Applies the role of digital technologies in agricultural extension</li> <li>• Implements the Adult learning methods</li> <li>• Understands and implements the role of adult learning</li> <li>• Understands and implement the role of gender in agriculture</li> <li>• Implements Gender mainstreaming</li> <li>• Facilitates the Exchange of indigenous knowledge</li> </ul>
Resource Implications		Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and Occupational health and safety (OHS) practices.
Methods of Assessment	of	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Written Test, Interview, Quiz, Practical assignment</li> <li>• Observation and Demonstration with Oral Questioning</li> </ul>
Context of Assessment	of	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture Level III	
Unit Title	Apply Digital Technology in Agriculture.
Unit Code	<a href="#">AGR FAQ3 08 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to Understand the Concept of digital technology, apply Digital technologies among rural population and recording and documentation system.

Element	Performance Criteria
1. Understand the Concept of digital technology	<p>1.1. <i>Digital technologies</i> are understood to apply digital technology.</p> <p>1.2. <i>Importance of digital technologies</i> are understood in agricultural sector</p> <p>1.3. <i>Role of digital technologies</i> in agriculture is identified to enhance agricultural development.</p> <p>1.4. <i>Principles of Agricultural technology</i> are identified to apply in the agricultural sector</p> <p>1.5 Mobile/Smart phones and template functions are understood to collect data and use in the reporting system</p>
2. Apply Digital technologies among rural population and farmers	<p>2.1. Require <i>tools and equipment</i> are identified and coordinated to apply digital technologies</p> <p>2.2. Digital technology <i>infrastructures</i> are identified to implement in agricultural development</p> <p>2.3. Digital technology skills are developed among the rural population</p> <p>2.4. Digital <i>Agri-preneurial</i> skill is developed for agricultural transformation.</p> <p>2.5. <i>Digital technology communication tools are</i> used to collect data and reporting system</p> <p>2.6. Digital technologies, tools and <i>techniques</i> are used to</p>



	<p>deliver digital education</p> <p>2.7. Implementation of digital technologies is promoted to enhance productivity</p>
3. Recording and documentation	<p>3.1. <i>Data collecting formats</i> are developed based on the needs</p> <p>3.2. <i>Data collection methodologies</i> are identified and selected based on the intended objectives</p> <p>3.3. Collected data are organized, analyzed and interpreted based on the intended objectives</p> <p>3.4. Organized, analyzed and interpreted data are documented and reported</p> <p>3.5. Feedbacks are collected from the relevant stakeholders</p>

Variable	Range
Digital technologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Internet</li> <li>• Computer</li> <li>• Smart phone</li> <li>• Tablet</li> <li>• GPS</li> <li>• Web browser</li> </ul>
Importance of digital technologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Sharing and searching information</li> <li>• Collect data</li> <li>• Enable storage of massive information</li> <li>• Time saving</li> </ul>

	<ul style="list-style-type: none"> <li>• Cost minimizing</li> <li>• Data accuracy and reliability</li> <li>• Data centralizing and administration</li> <li>• Improve collaboration</li> <li>• Enhance creativity</li> <li>• Enhances work accuracy</li> </ul>
Role of digital technologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Create connectivity between operations</li> <li>• Facilitate communication in agricultural sectors</li> <li>• Globalize communication</li> <li>• Strengthen market linkage</li> </ul>
Principles of Agricultural technology	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Design with user</li> <li>• Understand the existing ecosystem</li> <li>• Design for scale</li> <li>• Build for sustainability</li> <li>• Data driving</li> <li>• Reuse and improve</li> <li>• Address privacy and security</li> <li>• Collaborative</li> </ul>
tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Chargers</li> <li>• Computer</li> <li>• Smart phone</li> </ul>

	<ul style="list-style-type: none"> <li>• Tablet</li> <li>• I pad</li> <li>• GIS</li> <li>• Website</li> <li>• Online resources</li> <li>• Digital programs</li> </ul>
infrastructures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Telecommunications utilities</li> <li>• Electricity power</li> <li>• Server</li> <li>• Information and communication Technologies</li> <li>• Mobiles Phones</li> <li>• Computers systems</li> </ul>
Agri-preneurial	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Online marketing</li> <li>• Online Learning</li> </ul>
Digital technology communication tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Smart phone</li> <li>• Cell phone</li> <li>• Email</li> <li>• Telegram</li> <li>• SMS</li> <li>• What's APP</li> </ul>
technique	<p>May include, but not limited to:</p>

	<ul style="list-style-type: none"> <li>• Video chat</li> <li>• Virtual meeting</li> <li>• E-learning</li> <li>• Email</li> <li>• Video conference</li> </ul>
Data collecting formats	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Google sheet</li> <li>• Templates</li> <li>• Ex-cell</li> <li>• Google drive storage</li> </ul>
Data collection methodologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Interview</li> <li>• Questionnaire</li> <li>• Surveying</li> <li>• Focus group discussion (FGD)</li> <li>• Case study</li> </ul>

<b>Evidence guide</b>	
Critical aspects of competence	<p>Demonstrate knowledge and skills on:</p> <ul style="list-style-type: none"> <li>• Understand the basic digital technologies.</li> <li>• Use mobile/Smart phones and template to collect data and reporting the data</li> <li>• Understand the basic digital technology communication tools.</li> <li>• Identify the require tools and equipment to apply digital technologies</li> </ul>

	<ul style="list-style-type: none"> <li>• Apply digital technology</li> <li>• Understand the basic virtual meeting.</li> </ul>
Required knowledge and attitude	<p>Demonstrate knowledge on:</p> <ul style="list-style-type: none"> <li>• Understand the basic digital technology communication tools.</li> <li>• Understand the basic digital technologies.</li> <li>• New or upgraded technology performance</li> <li>• Environmental considerations</li> <li>• Appropriate performance evaluation.</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Use Digital technology communication to collect data and report system</li> <li>• Use digital technologies applications</li> <li>• Use software applications (word processing, spread sheets, data base management)</li> <li>• Apply skills for accessing and using spreadsheets and databases</li> <li>• Literacy skills for data analysis and interpretation</li> <li>• Determine and confirm digital technology communication tools.</li> </ul>
Resources implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/written test</li> <li>• Observation/demonstration with oral questioning</li> </ul>
Context of assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

<b>Occupational Standard: Fishery and Aquaculture Level III</b>	
<b>Unit Title</b>	<b>Prevent and Eliminate MUDA</b>
<b>Unit Code</b>	<a href="#"><u>AGR FAQ3 09 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her workplace by applying scientific problem-solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis It covers responsibility for the day-to-day operation of the work and ensures Kaizen Elements are continuously improved and institutionalized.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare for work.	1.1. Work instructions are used to determine job requirements, including method, material and equipment. 1.2. Job specifications are read and interpreted following working manual. 1.3. <b>OHS requirements</b> , including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work. 1.4. Appropriate material is selected for work. 1.5. <b>Safety equipment and tools</b> are identified and checked for safe and effective operation.
2. Identify MUDA and problem	2.1 Plan of MUDA and problem identification is prepared and implemented. 2.2 Causes and effects of MUDA are discussed. 2.3 All possible problems related to the process /Kaizen elements are listed using <b>statistical tools and techniques</b> . 2.4 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board. 2.5 <b>Tools and techniques</b> are used to draw and analyze current situation of the work place. 2.6 Wastes/MUDA are identified and measured based on <b>relevant procedures</b> . 2.7 Identified and measured wastes are reported to relevant personnel.
3. Analyze causes of a problem.	3.1 All possible causes of a problem are listed. 3.2 Cause relationships are analyzed using <b>4MIE</b> . 3.3 Causes of the problems are identified. 3.4 The root cause which is most directly related to the problem is selected. 3.5 All possible ways are listed using <b>creative idea generation</b> to eliminate the most critical root cause.

	<p>3.6 The suggested solutions are carefully tested and evaluated for potential complications.</p> <p>3.7 Detailed summaries of the action plan are prepared to implement the suggested solution.</p>
4. Eliminate MUDA and Assess effectiveness of the solution.	<p>4.1. Plan of MUDA elimination is prepared and implemented by <b>medium KPT</b> members.</p> <p>4.2. Necessary attitude and the <b>ten basic principles</b> for improvement are adopted to eliminate waste/MUDA.</p> <p>4.3. Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS.</p> <p>4.4. Wastes/MUDA are reduced and eliminated in accordance with OHS and organizational requirements.</p> <p>4.5. <b>Tangible and intangible results</b> are identified.</p> <p>4.6. Tangible results are compared with targets using <b>various types of diagrams</b>.</p> <p>4.7. Improvements gained by elimination of waste/MUDA are reported to relevant bodies.</p>
5. Prevent occurrence of wastes and sustain operation.	<p>5.1. Plan of MUDA prevention is prepared and implemented.</p> <p>5.2. Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement are discussed and prepared.</p> <p>5.3. Occurrences of wastes/MUDA are prevented by using <b>visual and auditory control methods</b>.</p> <p>5.4. Waste-free workplace is created using <b>5W and 1H</b> sheet.</p> <p>5.5. The completion of required operation is done in accordance with standard procedures and practices.</p> <p>5.6. The updating of standard procedures and practices is facilitated.</p> <p>5.7. The capability of the work team that aligns with the requirements of the procedure is ensured and trained on the new <b>Standard Operating Procedures (SOPs)</b>.</p>

Variable	Range
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.</li> <li>PPE are to include that prescribed under legislation/regulations/codes of</li> </ul>

	<p>practice and workplace policies and practices.</p> <ul style="list-style-type: none"> <li>• Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization.</li> <li>• Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.</li> </ul>
Safety equipment and tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Dust masks/goggles</li> <li>• Glove</li> <li>• Working cloth</li> <li>• First aid and</li> <li>• Safety shoes</li> </ul>
Statistical tools and techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 7 QC tools May include, but not limited to: <ul style="list-style-type: none"> <li>➤ Stratification</li> <li>➤ Pareto Diagram</li> <li>➤ Cause and Effect Diagram</li> <li>➤ Check Sheet</li> <li>➤ Control Chart/Graph</li> <li>➤ Histogram and Scatter Diagram</li> </ul> </li> <li>• QC techniques May include, but not limited to: <ul style="list-style-type: none"> <li>➤ Brain storming</li> <li>➤ Why analysis</li> <li>➤ What if analysis</li> <li>➤ 5W1H</li> </ul> </li> </ul>
Tools and techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Plant Layout</li> <li>• Process flow</li> <li>• Other Analysis tools</li> <li>• Do time study by work element</li> <li>• Measure Travel distance</li> <li>• Take a photo of workplace</li> <li>• Measure Total steps</li> <li>• Make list of items/products, who produces them and who uses them &amp; those in warehouses, storages etc.</li> <li>• Focal points to Check and find out existing problems</li> <li>• 5S</li> <li>• Layout improvement</li> </ul>



	<ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Andon</li> <li>• U-line</li> <li>• In-lining</li> <li>• Unification</li> <li>• Multi-process handling &amp; Multi-skilled operators</li> <li>• A.B. control (Two point control)</li> <li>• Cell production line</li> <li>• TPM (Total Productive Maintenance)</li> </ul>
Relevant procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Make waste visible</li> <li>• Be conscious of the waste</li> <li>• Be accountable for the waste and measure the waste.</li> </ul>
4M1E	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Man</li> <li>• Machine</li> <li>• Method</li> </ul> <p>Material and Environment</p>
Creative idea generation	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Exploring and examining ideas in varied ways</li> <li>• Elaborating and extrapolating</li> <li>• Conceptualizing</li> </ul>
Medium KPT	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 5S</li> <li>• 4M (Machine, Method, Material and Man)</li> <li>• 4p (Policy, Procedures, People and Plant)</li> <li>• PDCA cycle</li> </ul> <p>Basics of IE tools and techniques</p>
The ten basic principles for improvement	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Throw out all of your fixed ideas about how to do things.</li> <li>• Think of how the new method will work- not how it won.</li> <li>• Don't accept excuses. Totally deny the status quo.</li> <li>• Don't seek perfection. A 50 percent implementation rate is fine as long as it's done on the spot.</li> <li>• Correct mistakes the moment they are found.</li> <li>• Don't spend a lot of money on improvements.</li> <li>• Problems give you a chance to use your brain.</li> </ul>

	<ul style="list-style-type: none"> <li>• Ask “why?” At least five times until you find the ultimate cause.</li> <li>• Ten people’s ideas are better than one person’s.</li> <li>• Improvement knows no limits.</li> </ul>
Tangible and intangible results	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Tangible result may include quantifiable data</li> <li>• Intangible result may include qualitative data</li> </ul>
various types of diagrams.	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Line graph</li> <li>• Bar graph</li> <li>• Pie-chart</li> <li>• Scatter diagrams</li> <li>• Affinity diagrams</li> </ul>
Visual and auditory control methods	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Red Tagging</li> <li>• Sign boards</li> <li>• Outlining</li> <li>• Add ones</li> <li>• Kanban, etc.</li> </ul>
5W and 1H	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Who</li> <li>• What</li> <li>• Where</li> <li>• When</li> <li>• Why and</li> <li>• How</li> </ul>
Standard Operating Procedures (SOPs).	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The customer demands</li> <li>• The most efficient work routine (steps)</li> <li>• The cycle times required to complete work elements</li> <li>• All process quality checks required to minimize defects/errors</li> <li>• The exact amount of work in process required</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Discuss why wastes occur in the workplace</li> <li>• Discuss causes and effects of wastes/MUDA in the workplace</li> <li>• Analyze the current situation of the workplace by using appropriate tools and techniques</li> </ul>

	<ul style="list-style-type: none"> <li>• Identify, measure, eliminate and prevent occurrence of wastes by using appropriate tools and techniques</li> <li>• Use 5W and 1H sheet to prevent</li> <li>• Detect non-conforming products/services in the work area</li> <li>• Apply effective problem-solving approaches/strategies.</li> <li>• Implement and monitor improved practices and procedures</li> <li>• Apply statistical quality control tools and techniques.</li> </ul>
<p>Required Knowledge and Attitudes</p>	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Targets of customers and manufacturer/service provider</li> <li>• Traditional and kaizen thinking of price setting</li> <li>• Kaizen thinking in relation to targets of manufacturer/service provider and customer</li> <li>• value</li> <li>• The three categories of operations</li> <li>• the 3“MU”</li> <li>• wastes occur in the workplace</li> <li>• The 7 types of MUDA</li> <li>• QC story/PDCA cycle/</li> <li>• QC story/ Problem solving steps</li> <li>• QCC techniques</li> <li>• 7 QC tools</li> <li>• The Benefits of identifying and eliminating waste</li> <li>• Causes and effects of 7 MUDA</li> <li>• Procedures to identify MUDA</li> <li>• Necessary attitude and the ten basic principles for improvement</li> <li>• Procedures to eliminate MUDA</li> <li>• Prevention of wastes</li> <li>• Methods of waste prevention</li> <li>• Definition and purpose of standardization</li> <li>• Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement</li> <li>• Methods of visual and auditory control</li> <li>• TPM concept and its pillars.</li> <li>• Relevant OHS and environment requirements</li> <li>• Method and Lines of communication</li> <li>• Methods of making/recommending improvements.</li> <li>• Reporting procedures</li> <li>• Workplace procedures associated with the candidate's regular technical</li> </ul>

		<p>duties</p> <ul style="list-style-type: none"> <li>organizational structure of the enterprise</li> </ul>
Required skills		<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>Draw &amp; analyze current situation of the work place</li> <li>Use measurement apparatus (stop watch, tape, etc.)</li> <li>Calculate volume and area</li> <li>Apply statistical analysis tools</li> <li>Use and follow checklists to identify, measure and eliminate wastes/MUDA</li> <li>Identify and measure wastes/MUDA in accordance with OHS and procedures</li> <li>Use tools and techniques to eliminate wastes/MUDA in accordance with OHS procedure.</li> <li>Apply 5W and 1H sheet</li> <li>Update and use standard procedures for completion of required operation</li> <li>Apply Visual Management Board/Kaizen Board.</li> <li>Detect non-conforming products or services in the work area</li> <li>Work with others</li> <li>Read and interpret documents</li> <li>Observe situations</li> <li>Solve problems</li> <li>Communicate information</li> <li>Gather evidence by using different means</li> <li>Report activities and results using report formats</li> <li>Implement and monitor improved practices and procedures</li> </ul>
Resources Implication		<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment		<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>Interview/Written Test</li> <li>Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment		<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

# Level IV

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Occupational Standard: Fishery and aquaculture Level IV	
Unit Title	Establish Integrated fish farm
Unit code	<a href="#">AGR FAQ4 01 0722</a>
Unit descriptor	This unit of competency covers the skills, knowledge and attitude required to perform integrated fish farming, identify types of integrated fish farm, Fitting the matrix and standards, integrated fish farm construction, maintenance operations, select healthy food and fish feeding practice.

Element	Performance Criteria
1. Select site for integrated fish farm establishment	<p>1.1. <i>Site selection criteria</i> are understood and identified .</p> <p>1.2. <i>Components</i> and characteristics of integrated fish farm are identified and understood</p> <p>1.3. The construction techniques of integrated fish farming indentified and understood.</p> <p>1.4. Sites are selected for integrated fish farm establishment</p> <p>1.5. Suitable conditions for integrated fish farming are understood and identified.</p>
2. Prepare for integrated farm construction	<p>2.1 Construction work plan is prepared for integrated fish farm establishment</p> <p>2.2 <i>Types of integrated fish farming</i> are identified</p> <p>2.3 <i>Personal Protective Equipment (PPE)</i> are identified and used for integrated fish farm establishment</p> <p>2.4 <i>Equipment, tools and materials</i> are identified for integrated fish farm establishment</p> <p>2.5 Bill of quantity are set for construction of integrated fish farm</p> <p>2.6 Brief layouts are designed, prepared and undertaken to establish the integrated fish farm</p>
3.Establish integrated fish	3.1. Sites are properly measured, cleaned and excavated

farm	<p>3.2. Farms to be integrated are constructed</p> <p>3.3. Fitting of farms are performed based on the standard</p> <p>3.4. Integrated fish farms are constructed based on the design plan.</p> <p>3.5. Animal raising and plant cultivations are conducted in the integrated fish farm</p>
4.Manage integrated fish farm	<p>4.1. Maintenance operations in fish farm are carried out.</p> <p>4.2. Healthy food for fish reared is selected.</p> <p>4.3. Fish feeding are practiced.</p> <p>4.4. Fish diseases through visible symptoms in integrated fish farms are recognized.</p> <p>4.5. Fish farm sanitation are carried out</p> <p>4.6. Integrated fish farms are attentively observed</p>
5.Complete integrated fish farm activities	<p>5.1. <b>Waste material</b> produced during fish by product processing is handled according to rules and regulations</p> <p>5.2. Material, Tools, equipment and machinery are cleaned, maintained, handled, transported and stored according to the industry guidelines..</p> <p>5.3. Documents are organized, documented and reported for the responsible body</p>

Variable	Range
Site selection criteria	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Accessibility</li> <li>• Resource availability (water, land,)</li> <li>• Topography</li> <li>• Soil type</li> </ul>
Components	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Production unit</li> <li>• Water transfer and treatment unit</li> </ul>

	<ul style="list-style-type: none"> <li>• Feeding, equipment</li> </ul>
Types of integrated fish farming	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agri-based fish farming</li> <li>• Live-stock fish farming</li> <li>• Both livestock, Agri based fish farming</li> </ul>
Personal protective equipment (PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Sunscreen creams</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> </ul>
Tools, equipment and materials	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fish feeder</li> <li>• Shovel</li> <li>• Secchi Disk</li> <li>• Cement, sand and ballast</li> <li>• Stones – Quarry stones</li> <li>• Concrete blocks</li> <li>• Bricks</li> <li>• Timber</li> <li>• Corrugated iron sheets</li> <li>• Thatch</li> <li>• Nails, hinges, screws, nuts and bolts, latches and wire mesh.</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Waste water</li> <li>• Debris</li> </ul>



	<ul style="list-style-type: none"> <li>• Offal</li> </ul>
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Evidence Guide	
Critical Aspects of Competence	Demonstrate the skill and knowledge to: <ul style="list-style-type: none"> <li>• Construct integrated fish farming.</li> <li>• Conduct Animal raising and plant cultivations</li> <li>• Carry out maintenance operations in a fish pond.</li> <li>• Practice fish feeding.</li> <li>• Select healthy food for fish reared.</li> <li>• Select, measure, clean and excavate Sites</li> <li>• Describe the techniques of constructing integrated fish farm</li> <li>• Explain suitable conditions for integrated fish farming.</li> <li>• Perform fitting of farms</li> </ul>
Required Knowledge and Attitudes	Demonstrate knowledge to: <ul style="list-style-type: none"> <li>• Define and describe integrated fish farm.</li> <li>• Explain the importance of integrated fish farming systems.</li> <li>• Describe types of integrated fish farming.</li> <li>• Explain suitable conditions for integrated fish farming.</li> <li>• Describe the techniques of constructing integrated fish farm</li> <li>• Describe maintenance operations in integrated fish farm</li> <li>• List the ingredients of an appropriate diet for fish.</li> <li>• Understand the application of fertilizer in integrated fish farm.</li> <li>• Carry out feeding of fish.</li> <li>• Understand integrated fish farm sanitation.</li> <li>• Prepare construction work plan</li> <li>• Understand fitting the matrix and standards</li> <li>• Conduct animal raising and plant cultivations on an integrated fish farm.</li> <li>• Carry out Maintenance of operations in fish ponds</li> <li>• Handle Waste</li> </ul>

	<ul style="list-style-type: none"> <li>• Apply Safety procedures</li> </ul>
Required skills	<p>Demonstrate skill to:</p> <ul style="list-style-type: none"> <li>• Select, measure, clean and excavate Sites</li> <li>• Select and gather materials to construct shelters in integrated fish farming.</li> <li>• Set Bill of quantity</li> <li>• Prepare Construction work plan</li> <li>• Conduct Animal raising and plant cultivations</li> <li>• Construct integrated fish farming.</li> <li>• Carry out maintenance operations in a fish pond.</li> <li>• Select healthy food for fish reared.</li> <li>• Practice fish feeding.</li> <li>• Recognize fish diseases through visible symptoms in integrated fish farms.</li> <li>• Practice rules for integrated fish farm sanitations.</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Fishery And Aquaculture Level IV</b>	
<b>Unit Title</b>	<b>Operate fish nursery pond</b>
<b>Unit Code</b>	<a href="#"><u>AGR FAQ4 02 0722</u></a>
<b>Unit Descriptor</b>	This unit of competency covers the knowledge and skills required to prepare and operate fry nursery in ponds, stock fry, monitor water quality and feeding the fry. .

<b>Element</b>	<b>Performance Criteria</b>
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1. Prepare nursery ponds
  - 1.1. Select and prepare site in order to install and construct nursery pond
  - 1.2. Check and prepare **Tools, Equipment and materials**
  - 1.3. Personal protective equipment(PPE) selected and prepared according to occupational health safety(OHS) standard
  - 1.4. Pond is dried until cracking stage
  - 1.5. The soil is harrow and allow to dry
  - 1.6. Fry harvest schedule are identified
  - 1.7. **Lime** to be used are selected and computed for amount based on soil ph
  - 1.8. **Predator control** is selected, amount computed and applied
  - 1.9. **Fertilizer** are selected and computed the rate of application
  - 1.10. **Natural food** is allowed to bloom
  - 1.11. **Aerators/agitators** are set-up
  - 1.12. Perform water quality parameters are performed
2. Stock fish in nursery pond
  - 2.1. The amount and quality of fry are determined to be stocked
  - 2.2. Fry are Properly handled, transported and stocked
  - 2.3. Common **diseases** are periodically monitored and implemented control measures
  - 2.4. Diseased or moribund fish is sampled and brought to the laboratory for diagnosis based on **symptoms** observed
3. Perform feeding operations
  - 3.1. Feeds are identified and prepared according to stock
  - 3.2. Required feed is sampled and analyzed for feed ration
  - 3.3. Daily feed need is calculated
  - 3.4. Provide feed based on the requirement of fish
  - 3.5. Regularly check water quality to be maintained
4. Complete nursery operation
  - 4.1 work area ,Tools, equipment and materials are cleaned and sanitized according to the

working producers

4.2 Report disease observed and monitored to the veterinary

4.3 Regular accomplishment reports on all aqua farm activities will be done

Variable	Range
Tools, equipment and materials	May include but not limited:- <ul style="list-style-type: none"> <li>• Screen wire</li> <li>• Water pump with hose</li> <li>• Digging blades</li> <li>• Pipe ,</li> <li>• Net (0.5mm) mesh size</li> <li>• Wood</li> <li>• Rubber</li> <li>• Scoop net</li> <li>• Seine net</li> <li>• tubs</li> </ul>
Lime	May include but not limited:- <ul style="list-style-type: none"> <li>• Agricultural lime</li> <li>• Hydrated lime</li> <li>• Industrial lime</li> </ul>
Fertilizer	May include but not limited:- <ul style="list-style-type: none"> <li>• Chicken Manure</li> <li>• Urea</li> <li>• Ammonium phosphate</li> <li>• Combinations</li> <li>• Dung</li> </ul>
Predator control	May include but not limited:- <ul style="list-style-type: none"> <li>• Nets</li> <li>• Fence</li> <li>• Lime</li> </ul>
Natural food	May include but not limited:- <ul style="list-style-type: none"> <li>• Phytoplankton,</li> </ul>

	<ul style="list-style-type: none"> <li>• Zooplankton,</li> <li>• Annelids,</li> <li>• Worms,</li> <li>• Insects,</li> </ul>
Aerators/agitators	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Ring/vortex blowers</li> <li>• Roots blower</li> <li>• Paddlewheel aerator</li> </ul>
Disease	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Nutritional</li> <li>• Bacterial</li> <li>• Fungal</li> <li>• Parasitic</li> <li>• Viral</li> <li>• Environmental</li> </ul>
Symptoms	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Swirling</li> <li>• Swimming at surface</li> <li>• Non-feeding</li> <li>• Lethargic</li> <li>• Cottony growth</li> <li>• lesions</li> <li>• Septicemia</li> <li>• Over production of mucous</li> </ul>

<b>Evidence guide</b>			
Critical aspects of competence	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Prepare nursery ponds</li> <li>• Perform nursery operations</li> <li>• Perform feeding operations</li> <li>• Maintain good water quality</li> <li>• Perform common disease monitoring and implement treatment</li> <li>• Practice techniques in harvest and handling</li> </ul>		
Required knowledge and attitudes	<p>demonstrate knowledge to:</p> <ul style="list-style-type: none"> <li>• Construction of nursery pond</li> </ul>		
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	<ul style="list-style-type: none"> <li>• Prepare and submit regular accomplishment reports</li> <li>• Calculation in fertilizer and lime application for a given unit area</li> <li>• Read, design lay-out and systems of a nursery ponds</li> <li>• Use common nursery and aquaculture equipment</li> <li>• Understand and follow instructional manuals</li> <li>• Safe keeping of materials, tools and equipment every after use</li> <li>• Understand histology and embryology for fish</li> <li>• Understand and identify common disease and their symptom</li> </ul>
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Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Compute lime, fertilizer and predator control requirement for pond application</li> <li>• Performed correct fish sampling procedures</li> <li>• Calculation in fertilizer and lime application for a given unit area</li> <li>• Solved problems related to fish nursery operations</li> </ul> <p>Use and maintain aquaculture tools and equipment</p> <ul style="list-style-type: none"> <li>• Prepare nursery ponds</li> <li>• Perform nursery operations</li> <li>• Perform feeding operations</li> <li>• Maintain good water quality</li> <li>• Perform common disease monitoring and implement treatment</li> <li>• Practice techniques in harvest and handling</li> <li>• Prepare and submit regular accomplishment reports</li> <li>• Read, design lay-out and systems of a nursery ponds</li> <li>• Use common nursery and aquaculture equipment</li> <li>• Safe keeping of materials, tools and equipment every after use</li> </ul>
Resource implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and ohs practices.
Methods of assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/written test</li> <li>• Observation/demonstration with oral questioning</li> </ul>
Context of assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Fishery and Aquaculture Level IV	
Unit of Competence	Conduct Hatchery Management
Unit code	<a href="#">AGR FAQ4 03 0722</a>
Unit descriptor	This unit of competency covers the skills knowledge and attitude required to manage hatchery through collect and brood stock, production and raising progeny and prepare stock for distribution.

Elements of Competence	Performance criteria
1. Prepare for fish hatchery	<p>1.1. Hatchery management activities are identified</p> <p>1.2. <i>Tools, materials and equipment</i> are identified</p> <p>1.3. <i>Personal protective equipment(PPE)</i> selected and prepared according to occupational health safety(OHS) standard</p> <p>1.4. <i>Risk factors</i> that could affect the quality of the end cultured or held stock <i>progeny</i> are identified</p>
2. Collect and care brood stock	<p>2.1. Sanitation conditions of stocks are carried out according to workplace procedures and hygiene requirements</p> <p>2.2. Source of brood stock are identified</p> <p>2.3. Brood stock is collected and graded according to <i>quality</i> and <i>quantity requirements</i></p> <p>2.4. Brood stock is handled and transported to the farm in a manner which minimizes stress or damage.</p> <p>2.5. Brood stock is transferred into culture or holding structures.</p> <p>2.6. Brood stock is fed according to the requirement</p> <p>2.7. Brood stock is conditioned to induce maturation or breeding and spawning behavior</p>
3. Maintain spawn tank	<p>3.1. Spawning tanks are monitored regularly for signs of imminent spawning.</p> <p>3.2. Spawn are collected, washed and counted and assessed for quality of eggs and sperm</p> <p>3.3. Fertilized and hatched eggs are cared for according to</p>

	<p>biological requirements.</p> <p>3.4. <i>Post-spawning husbandry practices</i> are applied, as required</p> <p>3.5. Progeny are regularly monitored to ensure that individual needs are met by appropriate post-hatch-rearing procedures.</p> <p>3.6. Stock is graded, sorted and transported to new culture according to workplace procedures.</p>
4. Harvest and distribute progeny	<p>4.1 Progeny is selected through quality requirement and harvest progeny</p> <p>4.2 Progeny is graded, sorted and transported to new on-farm culture or holding structures</p> <p>4.3 Selected progeny is harvested and packed</p>
5. Complete hatchery activities	<p>5.1. Tools, materials and equipment are cleaned, repaired and stored</p> <p>5.2. Moribund or dead stock are collected and disposed</p> <p>5.3. Report is prepared, documented and communicated</p>

<b>Variables</b>	<b>Range statement</b>
Risk factors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Disease</li> <li>• Climate change</li> <li>• Flood</li> <li>• Photoperiod</li> <li>• Nutrition</li> </ul>
Progeny	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Spawn</li> <li>• Fry</li> <li>• Fingerling</li> <li>• Juvenile</li> </ul>
Personal Protective Clothing and Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves,</li> </ul>

	<ul style="list-style-type: none"> <li>• Boots</li> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>
Tools and Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Bin</li> <li>• Bivalve seed collectors:</li> <li>• Christmas tree rope</li> <li>• Mesh bags</li> <li>• Racks, sticks, tubes and slats</li> <li>• Buckets</li> <li>• Diving equipment (e.g. breath holding or compressed air)</li> <li>• Harvesting equipment:</li> <li>• Crowd nets and fish pumps or brails</li> <li>• Dilly nets, drop nets, scoop nets, trawl/prawn nets, cast nets, gill nets, traps (e.g. bait</li> <li>• wing nets and snares Dredges</li> <li>• Flow traps</li> <li>• Hand lines and fishing lines</li> <li>• Traditional fishing equipment</li> <li>• Holding and transport equipment</li> <li>• Oxygen supply</li> <li>• Tanks</li> </ul>
Quantity requirements:	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Density</li> </ul>

	<ul style="list-style-type: none"> <li>• Number</li> <li>• Volume</li> <li>• Weigh</li> </ul>
Quality requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Color and appendages</li> <li>• Disease history</li> <li>• Health and activity status</li> <li>• Life-cycle stage</li> <li>• Physical appearance</li> <li>• Previous reproductive performance</li> <li>• Sex</li> <li>• Size</li> <li>• Spawning condition</li> </ul>
Post-spawning husbandry practices	<p>May include but not limited to</p> <ul style="list-style-type: none"> <li>• Fry management</li> </ul>

<b>Evidence Guide</b>		
Critical aspects of competence	of	<p>Must demonstrate knowledge and skill to:</p> <ul style="list-style-type: none"> <li>• Recognize normal and abnormal stock behavior</li> <li>• Collect, transport and hold brood stock and seed stock according to collection requirements</li> <li>• Minimise stress and damage to stock.</li> <li>• Grade, sort, transport, harvest and pack progeny</li> <li>• Collect, wash and count spawn</li> <li>• Fertilize, hatch and care eggs</li> <li>• Apply Post-spawning husbandry practices</li> <li>• Identify Risk factors</li> </ul>
Required Knowledge and Attitudes	and	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Hatchery management activities</li> <li>• Resources needed for hatchery production activities</li> </ul>

	<ul style="list-style-type: none"> <li>• Count quantities of stock, feed and containers</li> <li>• Length, size, weight and other relevant criteria to sort and grade stock</li> <li>• key functions and features of workplace systems to record data</li> <li>• Behavior of stock in relation to the collection of brood stock and seed stock from the wild</li> <li>• Causes of stress and damage in stock</li> <li>• Collect, transport and handle equipment operating methods, maintenance and repairs</li> <li>• Effects of water and weather conditions on stock</li> <li>• Breeding requirement of brood stock and progeny</li> <li>• Nutrition and health requirements</li> <li>• Identification of fish sex and species</li> <li>• Number of ratio brood stock sex</li> </ul>
Required skills	<p>Demonstrate skill to:</p> <ul style="list-style-type: none"> <li>• Identify normal and abnormal stock behavior</li> <li>• Collect, transport and hold brood stock and seed stock</li> <li>• Grade, sort, transport, harvest and pack progeny</li> <li>• Collect, wash and count spawn</li> <li>• Fertilize, hatch and care eggs</li> <li>• Apply Post-spawning husbandry practices</li> <li>• Identify Risk factors</li> <li>• Assess sign of stress and damage to in fish</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard: Fishery and Aquaculture Level IV	
Unit Title	Monitor and Mangle Fishery Resources
Unit code	<a href="#">AGR FAQ4 04 0722</a>
Unit descriptor	This unit of competency covers the skills and knowledge required to data on fishing operations, catches fish species, quantities produced fish and collect data tools for resource management purposes. Evaluate fish catches against standards for specific species that may include size, quantity and types of fishing gears used in the fishing activities.

Element	Performance Criteria
1. Prepare for monitoring	1.1. Data collection format is developed 1.2. Fishery resource management tools <i>are identified</i> for sustainable yield of production. 1.3. <i>Approaches to fisheries management</i> are identified 1.4. Monitoring activities are scheduled 1.5. <i>Types of monitoring</i> are identified for fishery resource management. 1.6. Materials, tools and equipment are identified and prepared for monitoring
2. Perform monitoring and management activities	2.1 Problems are identified related to fishery resource utilization 2.2 Monitoring, control & surveillance strategy are understood and applied. 2.3 Data are collected according to data collection procedures 2.4 Monitor the availability of resource related to fishery 2.5 Relevant <i>legislation and regulation</i> that impact on workplace environmental practice 2.6 Follow all on-board safety procedures during observations 2.7 <b>Stock recovery measures</b> for ‘at risk’ fish stocks are undertaken 2.8 <b>Resource management tools</b> for sustainable yield of production are identified

	<p>2.9 Collected data and monitoring activities are analyzed and recommended</p> <p>2.10 Decision making are undertaken based on the analyzed data</p>
3. Finalize monitoring and management activities	<p>3.1 Functionality of Equipment, tools and materials are identified</p> <p>3.2 Malfunctional equipment, tools and materials are maintenance and repairing schedule are prepared</p> <p>3.3 Collected data and monitoring activities are properly documented</p> <p>3.4 Collected data are organized and reported</p>

Variable	Range
Types of monitoring	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Technical</li> <li>• Functional</li> <li>• Business process</li> </ul>
Approaches to fisheries management	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Ecosystem-based management</li> <li>• Rights-based management and</li> <li>• Management for resilience.</li> </ul>



Resource management tools	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Setting fishing limits and selectivity Controls of fishing gear</li> <li>• Changing fishing methods</li> <li>• Developing aquaculture techniques</li> <li>• Temporal closures</li> <li>• Spatial closures</li> <li>• Effort limits</li> <li>• Catch limits</li> <li>• Finding new resources</li> <li>• Laws can ban the fishing of certain species</li> </ul>
Legislation and regulations	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Fishery resource development utilization proclamation</li> <li>• Fish quality assurance regulation</li> <li>• Fishery resource administration and conserving and licensing directive</li> <li>• Live fish movement directive</li> </ul>
Stock recovery measures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Giving fishers rights over their own resources,</li> <li>• Setting and enforcing science-based catch limits,</li> <li>• Setting aside areas where fish can recover,</li> <li>• Avoid overfishing pressure</li> <li>• Limit by catch</li> <li>• Prevent farmed fish escapes</li> <li>• Manage pollution &amp; disease</li> <li>• Stocking the depleted fish in the water bodies</li> </ul>

<b>Evidence Guide</b>			
Critical aspects of competence	<p>Must demonstrate knowledge and skill to:</p> <ul style="list-style-type: none"> <li>• Develop data collection format</li> <li>• Identify fisheries management approaches monitoring activities are scheduled</li> <li>• Identify types of monitoring</li> <li>• Identify problems and apply monitoring, control &amp; surveillance strategy</li> <li>• Undertake stock recovery measures for ‘at risk’ fish stocks</li> <li>• Identify resource management tools</li> <li>• Analyze and make decision collected data</li> </ul>		
Required Knowledge	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Data collection format development</li> <li>• Approaches to fisheries management</li> <li>• Monitoring activities scheduling</li> <li>• Types of monitoring</li> <li>• Monitoring, control &amp; surveillance strategy</li> <li>• Data collection technique and procedures</li> <li>• Relevant legislation and regulation</li> <li>• Stock recovery measures for ‘at risk’ fish stocks</li> <li>• Resource management tools for sustainable yield of production</li> <li>• Collected data and monitoring activities are analyzed and recommended</li> <li>• Decision making techniques</li> </ul>		
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Develop data collection format</li> <li>• Identify fisheries management approaches</li> <li>• Schedule monitoring activities</li> <li>• Identify types of monitoring</li> <li>• Identify problems and apply monitoring, control &amp; surveillance</li> </ul>		
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	<p>strategy</p> <ul style="list-style-type: none"> <li>• Undertake stock recovery measures for ‘at risk’ fish stocks</li> <li>• Identify resource management tools</li> <li>• Analyze and make decision based on collected data</li> <li>• Identify materials, tools and equipment</li> <li>• Document collected data and monitoring activities</li> <li>• Organize and report collected data</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> <li>• Skills must be demonstrated in a water bodies workplace or an environment that accurately represents workplace conditions</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.\

Occupational Standard: Fishery and aquaculture Level IV	
<b>Unit Title</b>	<b>Conduct Waste disposal and management</b>
<b>Unit Code</b>	<a href="#"><u>AGR FAQ4 03 0722</u></a>
<b>Unit Descriptor</b>	This unit of competency involves waste collection, treatment and arranging for its disposal on-site facility. It covers the limited supervision of staff, conveying information, selecting equipment and method of operation, and monitoring potential impacts of waste disposal.

<b>Element</b>	<b>Performance criteria</b>
1. Identify precondition of waste treatment and disposal	<p>1.1. <i>Types of waste</i> and <i>treatment programs</i> are identified according to working procedure.</p> <p>1.2. <i>Labor and resources requirements</i> for treatment and disposal are determined and arranged.</p> <p>1.3. Suitable <i>personal protective equipment</i> (PPE) is selected and checked prior to use.</p> <p>1.4. <i>Risk factors</i> which could result in <i>adverse environmental impacts</i> are identified and minimization or contingency plans selected.</p> <p>1.5. Strategies to achieve desired treatment and disposal options are planned and communicated effectively.</p> <p>1.6. Equipment is inventoried, maintained and repaired in accordance with manufacturer's specifications.</p>
2. Conduct wastes treatment and disposal	<p>2.1. Suitable <i>personal protective equipment</i> (PPE) are used according to occupational health safety(OHS) procedures</p> <p>2.2 Wastes are identified based on the nature and types</p> <p>2.3 Waste material are sorted for reuse and recycling based on the nature and types</p> <p>2.4 Sorted waste are correctly handled and disposed based on rules , regulation and environmental policy.</p> <p>2.5 Waste treatment and disposal is completed in accordance with</p>

	<p>enterprise procedures and waste management policy.</p> <p>2.6 Disposal sites are regularly monitored to ensure non-bio-hazard waste materials are contained.</p>
3.Complete work activities	<p>3.1.Equipment, tools and materials are cleaned and stored</p> <p>3.2 Repairs and maintenance are undertaken on equipment</p> <p>3.2. Disposal and recycled wastes are recorded according to their nature and types</p> <p>3.3. The effectiveness of treatment and disposal operations and recommendations are made for improvements.</p> <p>3.4. Data are documented and reported to the responsible body.</p>

Variables	Range
Types of wastes:	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Solid wastes (uneaten feed and fecal droppings of cultured fish)</li> <li>• Dissolved wastes (soluble food metabolism , decomposed, and uneaten feed)</li> <li>• Bio-hazard (moribund fishes, chemicals)</li> <li>• Nitrogenous wastes</li> </ul>
Treatment programs	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Physical treatment,</li> <li>• Biological treatment,</li> <li>• Chemical treatment, and</li> <li>• Sludge treatment</li> <li>• Recycling</li> <li>• Integration with agriculture</li> </ul>
Labour requirements:	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Specialized equipment operators</li> <li>• Laborer</li> </ul>

	<ul style="list-style-type: none"> <li>• Vessel operators</li> <li>• Transport operators.</li> </ul>
Resources requirements	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Vessels, vehicles, trucks, trailers</li> <li>• Nets</li> <li>• Sediment ponds, and gulley traps</li> <li>• Absorbent materials</li> <li>• Submersible and sludge( mud) pumps</li> <li>• Holding and on farm transport equipment:</li> <li>• Buckets</li> <li>• Bins</li> <li>• Troughs</li> <li>• Tanks</li> <li>• Plastic bags, boxes, metal canisters and packing materials</li> <li>• Chemicals and reagents</li> <li>• Soil samples</li> <li>• Acid washed bottles</li> <li>• pH meter</li> <li>• Protective gloves</li> <li>• Respirator</li> <li>• Protective clothing</li> <li>• Photographs (video or still)</li> <li>• Water and benthic samplers</li> <li>• Laboratory equipment:</li> <li>• Vacuum filtration</li> <li>• Ovens</li> <li>• Balance</li> <li>• Spectrophotometer</li> <li>• Chemicals and reagents</li> <li>• Treatment facilities.</li> </ul>

Personal Protective Equipment ( PPE)	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Boots</li> <li>• sunhats</li> <li>• sunglass</li> <li>• overalls</li> <li>• gloves</li> <li>• Life saver jacket</li> </ul>
Risk factors:	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Adverse weather conditions</li> <li>• Equipment failure or breakdown</li> <li>• Absent staff</li> <li>• Stressed or dying stock</li> <li>• Occupational health and safety</li> </ul>
Adverse environmental impacts:	<p>May include but not limited:-</p> <ul style="list-style-type: none"> <li>• Effluent or waste spillage or entry into environment</li> <li>• Stock stress or contamination</li> <li>• Hyper nitrification and eutrophication</li> <li>• Build up of hydrogen sulphide, ammonia, nitrites, nitrates, phosphorus, methane</li> <li>• Changes in benthos</li> <li>• Transfer of pathogens</li> <li>• Increase in bacterial levels.</li> </ul>

### Evidence Guide

Critical Aspects of Competency	<p>Demonstrate knowledge ,skill and attitude to :</p> <ul style="list-style-type: none"> <li>• Types of waste and treatment</li> <li>• Risk factors which could result in adverse environmental impacts</li> <li>• Use suitable personal protective equipment (PPE)</li> <li>• Occupational health safety(OHS) procedures</li> <li>• Sort waste material for reuse and recycling based on the nature</li> </ul>
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	<p>and types</p> <ul style="list-style-type: none"> <li>• Waste treatment and disposal procedures</li> <li>• waste management policy</li> <li>• Monitor waste disposal sites are regularly to ensure non-bio-hazard waste materials</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrate knowledge and attitude to:</p> <ul style="list-style-type: none"> <li>• Types of wastes and their potential for impact on the environment</li> <li>• Methods for treating effluent and waste on- and off-site and the relative risk and cost factors for each</li> <li>• Equipment used in the collection, holding, transport and treatment of effluent and waste</li> <li>• Ecologically sustainable development (ESD) principles</li> <li>• Water and soil quality analyses</li> <li>• Government requirements pertaining to effluent and waste treatment and disposal</li> </ul>
Required Skills	<p>Demonstrate skill to :</p> <ul style="list-style-type: none"> <li>• Types of waste and treatment mechanism</li> <li>• Identify risk factors which could result in adverse environmental impacts</li> <li>• Use suitable personal protective equipment (PPE)</li> <li>• Apply Occupational health safety(OHS) procedures</li> <li>• Sort waste material for reuse and recycling based on the nature and types</li> <li>• Apply Waste treatment and disposal procedures</li> <li>• Apply waste management policy</li> <li>• Monitor waste disposal sites are regularly to ensure non-bio-hazard waste materials</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>



Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> <li>• Skills must be demonstrated in a water bodies workplace or an environment that accurately represents workplace conditions</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.\

Occupational Standard: Fishery and aquaculture Level IV	
Unit of competence	Manage Fish Farm
Unit Code	<a href="#">AGR FAQ4 06 0722</a>
Unit Descriptor	This unit of competency covers knowledge, skill and attitude required to handle stock and manage fish farm through assessing the condition for fish production.

Element	Performance Criteria
1. Prepare to manage fish farm	<p>1.1. <b>Tools, materials and Equipment</b> are identified</p> <p>1.2. <b>Personal Protective Equipment (PPE)</b> are prepared based on <b>occupational health and safety (OHS)</b> and fish farm management standards</p> <p>1.3. Harvest schedule are identified and production level are identified.</p> <p>1.4. Labor and resource requirements for stock handling are confirmed and arranged.</p> <p>1.5. Plan for fish farm management is prepared and communicated at work place</p>
2. Manage fish farm	<p>2.1 Types of <b>fish species and fish farm</b> are identified for fish pond management</p> <p>2.2 The <b>condition of fish farm</b> are assessed</p> <p>2.3 Risks and their control measures are identified</p> <p>2.4 <b>Fish farm management</b> activities are identified, planned and undertaken</p> <p>2.5 Over fertilization of water are protected</p>
3. Perform fish farm stock handling	<p>3.1. <b>Handling activities</b> are planned to minimize stock damages and stress.</p>

	<p>3.2. Time of stocking are identified</p> <p>3.3. Fish stocking density are calculated and measured</p> <p>3.4. Transport and holding arrangements are confirmed.</p> <p>3.5. Stock handling and culture of fish are identified and undertaken</p> <p>3.6. Equipments, materials, tools and waste materials are properly handled</p> <p>3.7. Recorded data are reported and documented</p>
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Variable	Range
Tools, materials and Equipment	<p>May include but not limited to:</p> <p>Materials</p> <ul style="list-style-type: none"> <li>• Polyethylene bag</li> <li>• Lime</li> <li>• Feed</li> <li>• Fertilizer</li> <li>• Stocking materials( fry, fingerlings, egg, larvae)</li> </ul> <p>Tools and equipment</p> <ul style="list-style-type: none"> <li>• Fishing nets , buckets, Ice box, refrigerator, Weighing balance, Measuring board, various needles, knives, Thermometer, ph meter, Dissolved oxygen (DO) meter, Conductivity meter, Sochi desk</li> <li>• Ammonia and Nitrate test Kits</li> <li>• Plankton nets</li> <li>• Benthic sampler</li> <li>• Loaders and vehicles</li> <li>• Spades, forks, rakes and hoes</li> <li>• Spray equipment</li> </ul>
Personal Protective Equipment ( PPE)	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Boots</li> </ul>

	<ul style="list-style-type: none"> <li>• Sunhats</li> <li>• Sunglass</li> <li>• Gown</li> <li>• Overalls</li> <li>• Raincoat</li> <li>• Wader</li> <li>• Gloves</li> <li>• Life saver jacket</li> </ul>
Occupational health and safety requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Codes of practice, regulations and/or guidance notes</li> <li>• Which may apply in a jurisdiction</li> <li>• Enterprise-specific occupational health and safety</li> <li>• Procedures, policies or standards</li> </ul>
Fish species	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Tilapia</li> <li>• Carp</li> <li>• Catfish</li> <li>• Trout fish</li> </ul>
Types of fish farm	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Cage system</li> <li>• Pen system</li> <li>• Pond system</li> <li>• Raceways</li> <li>• Recalculating system</li> </ul>
Fish farm Management	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Hatchery management</li> <li>• Water management</li> <li>• Pond management</li> <li>• Feed and feeding management</li> <li>• Fish health management</li> </ul>

	<ul style="list-style-type: none"> <li>• Security management</li> <li>• Stock management</li> <li>• Time of stocking</li> <li>• Harvesting and marketing</li> <li>• Record keeping</li> <li>• Labour management</li> </ul>
Condition Of Fish Farm	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Health</li> <li>• Feeding</li> <li>• Stock</li> <li>• Water</li> <li>• Market</li> </ul>
Handling activities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Weighing and measuring</li> <li>• Counting</li> <li>• Moving, transporting, transferring</li> <li>• Cleaning, washing,</li> </ul>

<b>Evidence Guide</b>		
Critical Aspects of Competency		<p>Demonstrate knowledge and skill to :</p> <ul style="list-style-type: none"> <li>• Identify types of fish species and fish farm</li> <li>• Assess the condition of fish farm are assessed</li> <li>• Identify fish farm management activities</li> <li>• Identify risks and their control measures are identified</li> <li>• Plan handling activities</li> <li>• Calculate and measure fish stocking density.</li> <li>• Identify stock handling and culture of fish</li> </ul>
Required Knowledge and		Demonstrate knowledge of:

Attitudes	<ul style="list-style-type: none"> <li>• Categories or types of culture stock</li> <li>• The condition of fish farm</li> <li>• Fish stocking density</li> <li>• Fish farm management activities</li> <li>• Identify risks and their control measures</li> <li>• Stock behavior and requirements of culture stock</li> <li>• Safety requirement and hazards</li> <li>• Equipment maintenance, repairs, calibration</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Identify types of fish species and fish farm</li> <li>• Assess the condition of fish farm are assessed</li> <li>• Identify fish farm management activities</li> <li>• Identify risks and their control measures are identified</li> <li>• Plan handling activities</li> <li>• Calculate and measure fish stocking density.</li> <li>• Identify stock handling and culture of fish</li> <li>• Operate advanced handling equipment, maintain and repair advanced handling equipments</li> <li>• Identify normal and abnormal stock behavior and environmental conditions</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard : Fishery and Aquaculture Level IV	
Unit Title	Develop value chain analysis
Unit Code	<a href="#">AGR FAQ4 09 0322</a>
Unit Descriptor	This unit covers the knowledge, skills, and attitude needed to Understand value chain ,Identify concepts of value chain ideas Develop the value chain and Upgraded value addition

Elements	Performance Criteria
1. Understand concepts of value chain	1.1 <i>Concept of value chain</i> are understood. 1.2 Value chain scopes are understood and identified. 1.3 <i>Principle of value chain</i> are understood and identified. 1.4 Value chain <i>characteristic</i> are understood and identified. 1.5 Value chain <i>Importance</i> are discussed and understood. 1.6 <i>Concept of value addition</i> are understood and determined.
2. Identify Value chain analysis	2.1 <i>Dimension</i> and <i>structures</i> of Value chain are identified and interpreted 2.2 <i>Value chain actors</i> are identified according to the objective and interest or need of chain actors 2.3 <i>Value chain maps</i> are illustrated for different <i>agricultural products</i> 2.4 Value chain techniques for <b>value addition</b> are identified and analyzed 2.5 <i>Contract farming</i> system is established to promote value chain.
3. Develop value chain	3.1 Value chain <i>parameters</i> are analyzed to compare the gaps between the existing and the benchmark. 3.2 <i>Constraints and gaps</i> are collected, analyzed and ranked according to the priority used to develop value chain 3.3 <i>Steps of value chain</i> development are identified 3.4 Value Chain <i>selection techniques</i> are identified to develop value chain 3.5 Potential <i>interventions</i> for value chain development are identified
4. Upgrade value addition	4.1 <i>Environmental considerations</i> are understood to upgrade value addition development 4.2 Value chain actors are identified for <i>Value addition</i> 4.3 Value chain is <i>upgraded</i> for agricultural products to measure performance of value chain development 4.4 Customer feedbacks are collected, organized and documented to improve

	Customer satisfaction
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Variable	Range
Concept value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Market oriented products</li> <li>• General Principle</li> <li>• Value chain actor</li> <li>• Mapping</li> <li>• Value addition</li> </ul>
Principles of value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Value chain mapping</li> <li>• Identifying the distribution of benefits of actors</li> <li>• Examining the role of upgrading</li> <li>• Governance in the value chain</li> </ul>
Characteristic	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Inbound logistic</li> <li>• Operation</li> <li>• Out bound logistic</li> <li>• Marketing</li> <li>• Sales</li> <li>• Services</li> </ul>
Importance	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Simple and better way to identify gaps and technologies.</li> <li>• Increases efficiency and systemic competitiveness of local enterprise</li> <li>• Primary targets involvement between local sector and sub sector</li> <li>• Reduces production costs and improves profitability</li> <li>• Improves customer satisfaction by providing quality product and service</li> </ul>
Dimension	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Sourcing of Inputs and supplies</li> <li>• Production capacity and technology</li> <li>• End-markets and trade</li> <li>• Governance of value chains</li> </ul>
Structures	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Input sector:</li> <li>• Farm/production sector:</li> <li>• Product sector</li> </ul>



Value chain actors	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Farmers,</li> <li>• Traders,</li> <li>• Processors,</li> <li>• Transporters</li> <li>• Wholesalers</li> <li>• Retailers and final consumers</li> </ul>
Agricultural sectors	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Crop farming</li> <li>• Forestry</li> <li>• Livestock</li> <li>• Fisher and aquaculture</li> <li>• Agricultural cooperative</li> <li>• Agricultural extension service</li> </ul>
Parameters	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Yield</li> <li>• Quality</li> <li>• Cost</li> <li>• Time</li> </ul>
Technology constraints	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Marketability</li> <li>• Profitability</li> <li>• Capability and Usefulness</li> <li>• Functionality</li> <li>• Import Substitution</li> <li>• Feasibility</li> <li>• Adaptability</li> <li>• Potential Impact to the MSE</li> <li>• Woman Empowerment</li> <li>• Employment</li> </ul>
Steps of value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Value chain selection</li> <li>• Data collection</li> <li>• Value chain mapping</li> <li>• Value analysis</li> <li>• Gap identification</li> <li>• Prioritizing constraints</li> <li>• Technology identification &amp; categorization</li> </ul>

Selection technique	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Integration economic</li> <li>• Environmental</li> <li>• Social</li> <li>• Institutional</li> </ul>
Environmental considerations	<p>May include , but not limited to:</p> <ul style="list-style-type: none"> <li>• Sustainability of the land use system for production and processing</li> <li>• Sources of energy</li> <li>• Efficiency of energy use</li> <li>• Greenhouse gas emissions</li> <li>• Water use efficiency and possibilities of contamination</li> <li>• Quantity and character of chemicals being used</li> <li>• Waste production and management</li> </ul>
Value addition	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• measured against its contribution to the customer</li> <li>• Technical benefits/features</li> <li>• Location benefits/features</li> <li>• Aesthetic benefits/features</li> <li>• Information benefits/features</li> </ul>
Contract farming	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Agreement between buyer and seller</li> <li>• Farmer and processing making firm for production</li> <li>• Supple of agricultural product</li> </ul>
Upgraded	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Farm crop</li> <li>• Milk and Milk Products</li> <li>• Meat and Meat Products</li> <li>• Poultry Products</li> <li>• Fish and Fish Products</li> <li>• Honey and Honey Products</li> </ul>

Evidence Guide	
Critical Aspects of Competence	<p>A Candidate must demonstrate the ability to:</p> <ul style="list-style-type: none"> <li>• Understand concept of value chain</li> <li>• Identify Value chain actors</li> <li>• Apply techniques for value addition</li> <li>• Understand selection technique to develop value chain</li> <li>• Identify potential interventions to value chain analysis</li> <li>• Evaluate value chain addition</li> </ul>

		<ul style="list-style-type: none"> <li>• Contract farming system is established to promote value chain</li> <li>• Describe value chain upgraded and identify environmental issues for value chain development</li> </ul>
Required Knowledge and Attitude		<p>A candidate must demonstrate the knowledge and attitude to :</p> <ul style="list-style-type: none"> <li>• Understand concepts of value chain</li> <li>• Understand and Recognize characteristic of value chain</li> <li>• Understand dimension and structures of value chain</li> <li>• Identify principles of value chain for agricultural production</li> <li>• Identify value chain actors and Illustrate value chain mapping in agricultural product</li> <li>• Identify value chain analysis improve vale chain development</li> <li>• Understand the Bench mark analyze to develop value chain analysis</li> <li>• Observe environmental issue to upgrade Value chain</li> <li>• Determine value chain upgrade and focus on Value chain addition</li> </ul>
Required Skills		<p>A candidate must demonstrate the Skills to :</p> <ul style="list-style-type: none"> <li>• Identify concepts of value chain</li> <li>• Recognize and describe characteristic of value chain</li> <li>• Describe dimension and structures of value chain</li> <li>• Apply principles of value chain for agricultural production</li> <li>• Classify value chain actors and Illustrate value chain mapping in agricultural sector</li> <li>• Analyze the Bench mark to develop value chain analysis</li> <li>• Apply value addition and determine value chain upgrade development value chain analysis</li> <li>• Contract farming system is established to promote value chain</li> <li>• Describe value chain upgraded and identify environmental issues for value chain development</li> </ul>
Resources Implication		Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment		<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment		Competence may be assessed in the work place or in a simulated work place setting.

No	Name	Educational Background	Institution	Email address
1.	Milion Bulo	Msc on Animal production	MoLEs	millionbulo@gmail.com
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3	Bekele Yehualashet	Msc of Fishery science	MoA	natbyselam@gmail.com
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5	Biruk Birhane	Bsc NRM (Coordinator )	MOLS	<a href="mailto:birukbirhane64@gmail.com">birukbirhane64@gmail.com</a>
6	Belachew Gatenet	Bsc NRM (Coordinator )	MOLS	