

## MANAGE FISH FARM

**UNIT CODE:** 0831 551 24A

**TVET CDACC UNIT CODE:** AGR/OS/AP/CR/03/5/MA

### UNIT DESCRIPTION

This unit describes competencies required to manage fish farm. This involves constructing fish holding units, producing fish fingerlings, producing table size fish, handling harvested fish and producing live fish feeds.

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1. Construct fish holding units	1.1 Tools, equipment and materials are assembled as per workplace requirements 1.2 Fish farm site is selected based on Fish Production Manual (FPM) 1.3 Fish farm is designed based on FPM 1.4 <b><i>Fish farm site is prepared</i></b> as per FPM. 1.5 Fish holding unit is constructed and installed according to FPM 1.6 Fish farm water filtration system is installed based on design features 1.7 <b><i>Auxiliary farm structures</i></b> are constructed or installed based on the farm design specifications 1.8 Predator control devices are installed as per FPM 1.9 Soil erosion control measures are taken based on good agricultural practices
2. Perform fish farm management practices	2.1 <b><i>Water quality parameters</i></b> are monitored as per FPM 2.2 Fish Pond is fertilized as per FPM 2.3 Fish Pond liming is carried out as per FPM 2.4 Fish Pond weed is controlled as per FPM

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
	<p>2.5 <b>Pond repair and maintenance</b> is performed as per workplace procedure</p> <p>2.7 Fish predators are controlled as per FPM</p> <p>2.8 Brood stock are monitored for signs of infections and stress according to FPM</p> <p>2.9 <b><i>Fish disease causes</i></b> are identified as per standard operation procedures</p> <p>2.12 <b><i>Sanitation and hygiene</i></b> are practiced as per recommended fish farm procedures</p> <p>2.13 <b><i>Fish feeds</i></b> are produced as per recommended procedures.</p> <p>2.14 Fish are fed as per FPM</p> <p>2.15 Fish feed performance is evaluated according to FPM</p> <p>2.16 Fish <b><i>bio-security measures</i></b> are applied as per FPM</p> <p>2.17 Fish farm wastes are managed as per environmental protection guidelines</p> <p>2.18 Records are kept as per work procedures</p>
3. Process harvested fish	<p>3.1 Tools, equipment and materials are assembled as per workplace requirements</p> <p>3.2 Harvesting of fish is carried out as per FPM</p> <p>3.3 Harvested fish is sorted according to FPM</p> <p>3.4 <b><i>Preservation methods</i></b> are performed as per FPM</p> <p>3.5 Fish processing methods are performed as per FPM</p> <p>3.6 Fish quality assurance is adhered to as per Hazard Analysis and Critical Control Points (HACCP) and Integrated Quality Management (IQM) procedures.</p> <p>3.7 Fish products and by-products <b><i>are</i></b> marketed as per market specifications</p> <p>3.8 Records are kept as per work procedures</p>
4. Manage fish hatcheries	4.1 PPEs are worn as per task requirements

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
	<p>4.2 Hatchery management tools, equipment and materials are assembled as per task requirements</p> <p>4.3 <b>Hatchery Pre-stocking activities</b> are performed as per FPM</p> <p>4.4 Brood stock is sourced as per FPM</p> <p>4.5 Brood stock is sorted and stocked into brood stock ponds based on FPM</p> <p>4.6 Brood stock is fed according to FPM.</p> <p>4.7 <b>Water quality parameters</b> are monitored and corrective action taken as per FPM</p> <p>4.8 Brood stock are monitored for signs of infections and stress as per FPM</p> <p>4.9 Fingerlings are produced as per FPM</p> <p>4.10 Records are kept as per work procedures</p>
5. Manage fish cages	<p>5.1 Fish cage is designed as per FPM</p> <p>5.2 Cages are set up in the water body as per Fisheries Management and Development Act</p> <p>5.3 Cages are stocked based on FPM</p> <p>5.4 <b>Husbandry practices</b> are performed based on FPM</p> <p>5.5 Fish safety and Bio security measures are applied as per FPM</p> <p>5.6 Fish stock is harvested based on FPM</p> <p>5.7 Cages are maintained based on FPM</p> <p>5.8 Records are kept as per work procedures</p>
6. Manage re-circulatory aquaculture systems	<p>6.1 <b>Re-circulating Aquaculture System</b> (RAS) is designed based on FPM</p> <p>6.2 Re-circulating Aquaculture System is installed based on design specifications</p> <p>6.3 Bio safety measures are set up based on good animal husbandry practices</p>

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
	<b>2.4 RAS management activities</b> are performed as per standard operating procedures.

## **RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

<b>VARIABLE</b>	<b>RANGE</b>
1. Fish farm site preparation activities may include but not limited to:	<ul style="list-style-type: none"> <li>• Site selection</li> <li>• Site clearance</li> <li>• Measurement and pegging</li> </ul>
2. Auxiliary farm structures may include but not limited to:	<ul style="list-style-type: none"> <li>• Farm stores</li> <li>• Roads</li> <li>• Fences</li> <li>• Offices</li> <li>• Laboratories</li> <li>• washrooms</li> </ul>
3. Water quality parameters may include but not limited to:	<ul style="list-style-type: none"> <li>• Water temperature</li> <li>• Water PH</li> <li>• Dissolved oxygen</li> <li>• Ammonia</li> <li>• Nitrates</li> <li>• nitrites</li> <li>• Salinity</li> <li>• Turbidity</li> <li>• Salinity</li> <li>• Total suspended solids</li> <li>• Heavy metals</li> <li>• Hydrogen sulphide</li> </ul>
4. Pond repair and maintenance may	<ul style="list-style-type: none"> <li>• Sealing leakage</li> </ul>

<b>VARIABLE</b>	<b>RANGE</b>
include but not limited to:	<ul style="list-style-type: none"> <li>• De-clogging</li> <li>• Water flow rate regulation</li> </ul>
5. Fish disease causes may include but not limited to:	<ul style="list-style-type: none"> <li>• Environmental/water quality causes</li> <li>• Hereditary/genetic causes</li> <li>• Microbial/pathogenic causes</li> <li>• Nutritional causes</li> <li>• Physical injury</li> </ul>
6. Sanitation and hygiene may include but not limited to:	<ul style="list-style-type: none"> <li>• Regular hand washing</li> <li>• Sanitization</li> <li>• Disinfection</li> <li>• Use of foot bath</li> </ul>
7. Fish feeds	<ul style="list-style-type: none"> <li>• Live or natural feeds</li> <li>• Concentrate feeds</li> </ul>
8. bio-security measures may include but not limited to:	<ul style="list-style-type: none"> <li>• Sanitation and hygiene practices</li> <li>• Sourcing of feeds, fingerlings, brood stock</li> <li>• Self-closing doors</li> <li>• Use of air conditioning instead of natural ventilation.</li> <li>• Use of artificial lights.</li> <li>• Visitor Movement control</li> </ul>
9. Preservation methods may include but not limited to:	<ul style="list-style-type: none"> <li>• Chilling</li> <li>• Freezing</li> <li>• Salting</li> <li>• Drying</li> <li>• Salting</li> <li>• smoking</li> </ul>
10. Fish processing methods may include but not limited to:	<ul style="list-style-type: none"> <li>• Salting</li> <li>• Drying</li> <li>• Salting</li> <li>• Smoking</li> <li>• Filleting</li> </ul>

VARIABLE	RANGE
	<ul style="list-style-type: none"> <li>• Frying</li> </ul>
11. Hatchery Pre-stocking activities may include but not limited to:	<ul style="list-style-type: none"> <li>• Cleaning</li> <li>• De-clogging</li> <li>• Removal of sludge</li> <li>• Fixing water leakages</li> <li>• liming</li> <li>• Filling with water</li> <li>• Controlling water flow rate</li> </ul>
12. Husbandry practices may include but not limited to:	<ul style="list-style-type: none"> <li>• Feeding</li> <li>• Aeration</li> <li>• Water flow rate control</li> <li>• Water quality monitoring</li> <li>• Predator control</li> <li>• Sludge removal</li> <li>• De-clogging of drainage system</li> <li>• Cleaning of filters</li> <li>• Harvesting</li> <li>• Growth monitoring</li> <li>• Fingerling/fry grading</li> <li>• Marketing of hatchery products</li> <li>• Fish health monitoring</li> <li>• Fish propagation</li> <li>• Fish stocking</li> <li>• Fingerling packaging and transport</li> </ul>
13. Fish safety and Bio security measures may include but not limited to:	<ul style="list-style-type: none"> <li>• Fencing</li> <li>• Proper Sourcing of feeds, fingerlings, brood stock</li> <li>• Predator control</li> <li>• Visitor Movement control</li> <li>• Quarantine and isolation</li> </ul>
14. R-ecirculating Aquaculture System	<ul style="list-style-type: none"> <li>• Bio-filters</li> </ul>

VARIABLE	RANGE
(RAS) may include but not limited to:	<ul style="list-style-type: none"> <li>• Mechanical filters</li> <li>• Fish culture unit(s)</li> <li>• Water reservoir</li> <li>• Water drainage system</li> <li>• Water aeration system</li> </ul>
15. RAS management activities may include but not limited to:	<ul style="list-style-type: none"> <li>• Cleaning of the unit</li> <li>• De-clogging</li> <li>• Water flow rate control</li> <li>• Water aeration or oxygenation</li> <li>• Fish feeding</li> <li>• Water quality monitoring</li> <li>• Predator control</li> <li>• Sludge removal</li> <li>• De-clogging of drainage system</li> <li>• Cleaning of filters</li> <li>• Harvesting</li> <li>• Growth monitoring</li> <li>• Fingerling/fry grading</li> <li>• Marketing of hatchery products</li> <li>• Fish health monitoring</li> <li>• Fish propagation</li> <li>• Fish stocking</li> <li>• Fingerling packaging and transport</li> </ul>

## REQUIRED KNOWLEDGE AND SKILLS

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

### Required knowledge

The individual needs to demonstrate knowledge of:

- Water chemistry
- Fish biology
- Fish handling

- Fish stocking
- Fish harvesting
- Fish packaging and transportation
- Fish health monitoring
- Water flow rate control
- Fish feeding
- Fish growth monitoring
- Fish marketing

### Required skills

The individual needs to demonstrate the following skills:

- Procurement
- water quality equipment Calibration
- Net repair and maintenance
- Record keeping
- Communication
- Problem solving
- Time management
- Digital
- Critical thinking

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Adhered to safe work procedures as per the workplace policy.</p> <p>1.2 Set up fish culture unit as per the FPM</p> <p>1.3 Maintained water flow rate as per the FPM</p> <p>1.4 Aerated fish holding unit as per the FPM</p> <p>1.5 Produced fish feeds as per the FPM</p> <p>1.6 Stocked fish holding units as per the FPM</p> <p>1.7 Fish are fed as per FPM</p>
-----------------------------------	---



	1.8 Fertilized fish pond as per FPM 1.9 Carried out fish pond liming as per FPM 1.10 Managed fish health as per the FPM. 1.11 Harvested fish as per the FPM 1.12 Handled harvested fish as per the FPM. 1.13 Packaged and transported fish as per FPM 1.14 Marketed fish products and by products as per FPM 1.15 Managed fish farm wastes as per environmental protection guidelines 1.16 Repaired and maintained pond as per workplace procedure 1.17 <b>Kept</b> records Package and transport fish
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical assessment 3.2 Oral assessment 3.3 Portfolio of evidence 3.4 Project 3.5 Case study 3.6 Third party report (recognition of prior learning) 3.7 Written tests
4. Context of assessment	Competency may be assessed in a: 4.1 Workplace 4.2 Simulated workplace
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.