

OPERATE FISH HATCHERY

UNIT CODE: AQ/OS/AM/CR/03/4/A

UNIT DESCRIPTION

This unit specifies the competencies required to operate a fish hatchery. It involves Implementing fish hatchery food safety plan, preparing hatchery for stocking, stocking and feeding the brood stock, naturally propagating farmed fish and harvesting the fry and fingerlings. It also involves packaging fish sees for transportation, maintaining the hatchery through cleanliness and regulating water flow rates.

ELEMENT	PERFORMANCE CRITERIA
<p>These describe the key outcomes which make up workplace function.</p>	<p>These are assessable statements which specify the required level of performance for each of the elements.</p> <p><i>Bold and italicized terms are elaborated in the Range</i></p>
<p>1. Implement fish hatchery food safety plan</p>	<p>1.1 Food safety <i>Hazards</i> in the fish hatchery are identified and documented</p> <p>1.2 Possible <i>sources</i> of physical, chemical and microbial contamination in the hatchery are identified based on the hazards</p> <p>1.3 Standard operating procedures for <i>preventing</i> and <i>correcting</i> fish feed safety risks are implemented based on the identified risks.</p>
<p>2. Prepare broodstock facilities</p>	<p>2.1 <i>PPE</i>'s are identified and gathered as per task requirements</p> <p>2.2 <i>Tools, equipment and food grade materials</i> are assembled as per task requirements</p> <p>2.3 Fish pond is filled with water fit for aquaculture to required depth based on pond depth and purpose</p> <p>2.4 Fish pond fertilized based on recommended fertilization rates as per identified food safety risks</p> <p>2.5 Fish happas are cleaned, disinfected as per cleaning and sanitation procedures and appropriately set in the fish pond</p> <p>2.6 Water flow within the fish pond is set at rates suitable for species under culture and evaporation rates.</p>
<p>3. Stock hatchery with broodstock</p>	<p>3.1 Broodstock are selected based on their state of readiness for breeding by observation of physical features</p> <p>3.2 Broodstock is acclimatized based on pond water temperatures</p> <p>3.3 Selected broodstock for natural breeding is transferred to culture facilities based on species specific stocking density</p> <p>3.4 Broodstock are released into the culture facilities based on</p>

	fish stocking procedures
4. Feed broodstock	<p>4.1 Fish feeds are safely handled to avoid cross-contamination and adulteration.</p> <p>4.2 Feeds are weighed as per the feeding schedule for the specified fish species</p> <p>4.3 Weighed feed rations are divided by frequency of feeding as specified in the feeding schedule</p> <p>4.4 Fish is fed using any of the appropriate methods based on labour available, weather conditions, size of the culture units</p> <p>4.5 Fish feeding behavior is monitored during feeding and recorded</p>
5. Naturally propagate farmed fish	<p>5.1 The culture unit with broodstock is observed after about 2.5 weeks for presence of hatchlings based on biology of the fish</p> <p>5.2 Harvesting tools, equipment and food grade materials are assembled in line with task requirement</p> <p>5.3 Harvesting net is chosen based on mesh size and placed at the outlet</p> <p>5.4 Pond water is released from the pond based on purpose of harvesting</p> <p>5.5 Fish hatchlings and fry harvested depending on sizes and quantities required in the market</p> <p>5.6 Harvested fish is sorted according to size demanded by the market and placed into holding containers</p>
6. Package fish seeds	<p>6.1 Packaging container are assembled as per the task requirements</p> <p>6.2 Water fit for aquaculture is introduced into the packaging container to appropriate level</p> <p>6.3 Fish fry or fingerlings are counted and released into the packaging material as per the standard operating procedure</p> <p>6.4 Oxygen is released in to the package containing fish to appropriate levels</p> <p>6.5 Fish package container is airtight sealed</p>
7. Maintain the hatchery	<p>7.1 Indoor and outdoor hatchery components are cleaned with food grade cleaning agents</p> <p>7.2 Water flow levels rates and levels within the culture units are maintained based on the fish stages reared</p>

RANGE

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

Variable	Range
1. Hazards may include but not limited to:	<ul style="list-style-type: none">• Physical hazards• Chemical hazards<ul style="list-style-type: none">• Heavy metals• Pesticides• Industrial chemicals• Biological hazards<ul style="list-style-type: none">• Aquatic animal diseases• Naturally occurring toxins
2. Sources of hazards may include but not limited to:	<ul style="list-style-type: none">• Infected parent stock/ broodstock• Poor water quality• Human carriers• Cleaning agents• Pesticides• Antibiotics
3. Preventing may include but not limited to:	<ul style="list-style-type: none">• Quarantine of brooders• Good water quality• Sanitary and phytosanitary measures• Biosecurity measures
4. Correcting may include but not limited to:	<ul style="list-style-type: none">• Parasite control• Fish treatment• Water flow management• Sterilization of the hatchery
5. Food safety standards	<ul style="list-style-type: none">• Codes of practice• Principles of food hygiene
6. Water fit for aquaculture include but not limited to	<ul style="list-style-type: none">• Fish species specific recommended level of chlorine• Fish species specific Recommended pH range• Fish species specific Recommended Ammonia• Fish species specific recommended turbidity level• Free of infective pathogens
7. PPE's include but not limited to:	<ul style="list-style-type: none">• Safety goggles, gum boots, wading suit, gloves, dust coats, first aid kits, life ring, life jacket
8. Tools and equipment include but not limited to:	<ul style="list-style-type: none">• Weighing balance, measuring cylinders, perforators, basins, harvesting gear, happa nets, buckets, scoop nets, sieves of assorted sizes

9. Harvesting include but not limited to:	<ul style="list-style-type: none"> • Partial or complete harvesting
10. Materials include but not limited to:	<ul style="list-style-type: none"> • Salt, towel, warm water, feeds, fertilizers, assorted bowls, cleaning and disinfection agents
11. State of readiness include but not limited to:	<ul style="list-style-type: none"> • Ready to spawn (swollen abdomen), not yet ready, already spawned

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Food safety risk assessment and communication
- Trouble shooting
- Use of tools and equipment
- Weighing
- Numeracy
- Fish handling and packaging
- Identification of anatomical features
- Basic first aid
- Hand sexing of brooders
- Identification of signs of healthy fish

Required Knowledge

The individual needs to demonstrate knowledge of:

- Food safety Standards (codes of practice for fish and fishery products)
- Regulatory bodies/ Competent authorities
- Hazard Analysis Critical Control Point (HACCP)
- Types of tools, equipment and PPEs
- Basic fish anatomy
- Fish feeds and feeding
- Cleaning and disinfection procedures

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Implemented fish hatchery food safety plan 1.2 Set water flow within hatchery at appropriate rates 1.3 Reduced stress to the fish during stocking 1.4 Fed fish as per feeding schedule and prevailing weather conditions 1.5 Produced high quality health fish seeds 1.6 Harvested and sorted fish seeds based on market demands 1.7 Minimized stress and mortalities of fish during transportation by proper packaging
2. Resource Implications for competence certification	The following resources must be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place 2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral presentation 3.3 Oral questioning 3.4 Written tests 3.5 Practical tests
4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.