

PRODUCE GROW-OUT FISH

UNIT CODE: AQ/OS/AM/CR/04/4/A

UNIT DESCRIPTION

This unit specifies the competencies required to produce grow out fish. It involves ability to implement fish grow-out food safety plan, prepare fish grow out culture units in readiness for stocking, as well as stock and feed the fish while monitoring and controlling disease occurrences. It also involves the competencies required to maintain farm cleanliness, manage other livestock that is integrated with fish farming, and harvest fish upon maturity.

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA 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. Implement Fish Grow-out Food safety plan	1.1 Food safety Hazards in the fish grow-out are identified and documented. 1.2 Possible sources of physical, chemical and microbial contamination in the fish grow-out are identified based on the hazards 1.3 Standard operating procedures for preventing and correcting fish feed safety risks are implemented based on the identified risks.
2. Prepare grow out culture units	2.1 PPEs are identified and gathered as per task requirement 2.2 Safety precautions are adhered to 2.3 Pond preparation tools, equipment and materials are assembled in line with task requirement 2.4 Land-based fish culture units are drained and dried to workable standards 2.5 Culture tanks are cleaned and disinfected as per standard sanitary operating procedures 2.6 Earthen ponds for restocking are dredged and repaired following standard procedures 2.7 Earthen pond bottoms are limed at recommended rates based on type of lime and soil type. 2.8 Culture units are filled with water fit for aquaculture to a depth recommended for the fish species to be cultured 2.9 Grow out culture units are fertilized as per the recommended fertilization rates and quantities

	<p>2.10 Water inlet and outlet systems are cleaned and screens repaired in accordance with the work place procedures</p> <p>2.11 Fish cages are repaired, cleaned, disinfected with food grade cleaning agents and assembled as per workplace procedures.</p>
3. Stock grow out culture units	<p>3.1 Source of quality fingerlings is identified from approved hatcheries and orders placed</p> <p>3.2 Tools, equipment and materials for fingerling handling and transportation are assembled in line with task requirement</p> <p>3.3 Fry or fingerlings are procured and acclimatized based on culture unit temperatures</p> <p>3.4 Fry or fingerlings are stocked into ponds following recommended stress minimization procedures</p> <p>3.5 Stocked ponds are monitored for fingerling stress and mortalities through direct observations</p>
4. Feed and maintain fish in the grow out culture units	<p>4.1 Fertilization of the culture units is carried out in accordance with secchi depth measurements</p> <p>4.2 Feeds are procured from approved sources.</p> <p>4.3 Dry fish feeds are stored in cool and dry areas</p> <p>4.4 Moist fish feeds are properly refrigerated as per the identified food safety risks</p> <p>4.5 Appropriate feeding method is determined based on type of culture system and available manpower</p> <p>4.6 Feeds are weighed as per the feeding schedule for the specified fish species and size</p> <p>4.7 Fish are fed at rates and rations outlined in the feeding schedule and periodic sampling results</p> <p>4.8 Fish feeding response is monitored and any abnormalities addressed in accordance with the farm manual.</p>
5. Maintain fish farm	<p>5.1 Maintenance tools and equipment are identified and assembled as per the task requirements</p> <p>5.2 Grass on pond dykes is cleared periodically to ground level</p> <p>5.3 Infringing vegetation is cleared as per good aquaculture practices</p> <p>5.4 Pipes and drainage channels are monitored and cleared blockages as per workplace procedures</p> <p>5.5 Screens and water flow control structures are cleaned and repaired in accordance with workplace procedures</p> <p>5.6 Water channels and intake structures are repaired and cleaned to maintain uniform water flow</p> <p>5.7 Fences and intruder control devices are checked for defects and repaired promptly as per respective repair procedures</p>

	<p>5.8 Cage farms are monitored for intruders, water quality and invasive weeds and remedial action taken following workplace procedures</p> <p>5.9 Tools and equipment are cleaned and stored as per workplace procedures</p>
6. Maintain fish culture units	<p>6.1 Grow out culture units are fertilized as per the recommended fertilization rates and quantities as per identified food safety risks</p> <p>6.2 Water inlet and outlet systems are cleaned and screens repaired in accordance with the work place procedures</p> <p>6.3 Water flow and water levels in culture units are monitored and controlled as per the daily, weekly and monthly work schedules</p> <p>6.4 Fish culture units are checked for tear-and-wear and damages and corrective measures taken following standard procedures</p> <p>6.5 Weed growth is monitored and controlled following good aquaculture practices.</p> <p>6.6 Tanks are cleaned and disinfected using food grade cleaning agents</p> <p>6.7 Fish cages are monitored for physical damages on nets and framework and repair procedures initiated as per workplace procedures</p>
7. Control disease, parasites and predators	<p>7.1 Water quality parameters are monitored as per identified food safety risks and remedial measures undertaken</p> <p>7.2 Fish ponds are fertilized as per identified risks</p> <p>7.3 Fish are checked for signs of stress and disease based on physical appearance and behavioral changes</p> <p>7.4 Peculiarities in the general fish behavior and physical appearance is monitored using a checklist provided by the farm management</p> <p>7.5 Biosecurity structures are maintained and disinfectants replenished as per the standard operating procedures</p> <p>7.6 Remedial measures for stressed and diseased fish are undertaken as per International Organization for Animal Health (OIE) guidelines</p> <p>7.7 Predator control devices are checked for defects and repaired promptly as per respective repair procedures</p> <p>7.8 Screens in pipes and channels are checked and repaired in accordance with workplace procedures</p>
8. Harvest fish	<p>8.1 Fish market is identified and contacted based on customer preferences</p> <p>8.2 Harvesting tools, equipment and materials are assembled in line with task requirement</p> <p>8.3 Harvesting of fish is carried out using appropriate equipment</p>

	<p>and techniques while observing good hygienic practices</p> <p>8.4Harvested fish are sorted according to size and species while observing good hygienic practices</p> <p>8.5Harvested fish is marketed or processed according to customer demands</p> <p>8.6Harvesting tools, equipment and materials are cleaned and stored according to workplace procedures</p>
9. Maintain integrated livestock on fish farm	<p>9.1Housing structure for <i>integrated livestock</i> is repaired and cleaned as outlined in the farm management plan</p> <p>9.2Target species is moved into the housing structures and stocked at densities recommended by an aquaculture technician</p> <p>9.3Livestock are fed according to the feeding schedule</p> <p>9.4Signs of stress and disease are noted and promptly reported to a livestock technician for action</p> <p>9.5Integrated livestock movement is controlled from the fish production sites as per identified risks</p> <p>9.6Livestock manure is completely decomposed and treated before fertilizing fish ponds as per the manual of standard operating procedures.</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"> • Poor feeding • Poor feed quality • Poor water quality • Human carriers • Cleaning agents • Pesticides • Industrial/ agricultural wastes

3. Preventing may include but not limited to:	<ul style="list-style-type: none"> • Good water quality • Sanitary measures • Proper use of antibiotics • Disease management • Parasite control • Use of quality feed • Good hygienic practices • Biosecurity measures • Probiotics
4. Correcting may include but not limited to:	<ul style="list-style-type: none"> • Disposal of contaminated fish • Fish treatment • Water flow management • Sterilization of the fish grow-out
5. 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
6. PPEs include but not limited to	<ul style="list-style-type: none"> • Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, industrial mouth piece
7. Pond preparation tools, equipment and materials include but not limited to:	<ul style="list-style-type: none"> • Measuring tape, weighing scale, wheelbarrow, pH meter, hoes, spades, rakes. • Lime, fertilizer, ropes,
8. Land-based fish culture units include but not limited to	<ul style="list-style-type: none"> • Earthen ponds, lined ponds, concrete tanks, plastic tanks, fiberglass, raceways
9. Maintenance tools, equipment and materials include but not limited to:	<ul style="list-style-type: none"> • Slashers, machetes, jembes, spades, wheelbarrow, rakes, gunny bags, scrapers, mowers
10. Screens include but not limited to:	<ul style="list-style-type: none"> • Wire mesh, grills, coffee tray wire, netting, sticks
11. Harvesting tools, equipment and materials include but not limited to:	<ul style="list-style-type: none"> • Seine net, scoop net, buckets, laundry baskets, weighing scale, perforators
12. Integrated livestock include but not limited to:	<ul style="list-style-type: none"> • Chicken, ducks, sheep, pigs

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
- Basic plumbing
- Pond construction
- Measuring
- Fish handling
- Record keeping
- Fish feeding
- Predator control
- Fish harvesting
- Communication
- Basic first aid
- Numeracy

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
- Fish disease
- Basic fish biology
- Fish feeds and feeding methods
- Types and characteristics of fertilizers
- Water quality parameters
- Fish predators and intrusive animals
- Fish cages
- Basic animal husbandry

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 grow-out food safety plan 1.2 Drained and cleaned fish culture units 1.3 Identified and repaired defects on fish culture units
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	<ul style="list-style-type: none"> 1.4 Stocked fingerlings with minimal mortalities 1.5 Stored feeds under hygienic conditions 1.6 Monitored and controlled diseases, parasites and intruders on the farm 1.7 Harvested fish using appropriate tools 1.8 Handled integrated livestock using Best Management Practices (BMP) 1.9 Maintained a clean environment within and around the production units
2. Resource Implications for competence certification	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 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	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation 3.2 Oral presentation 3.3 Oral questioning 3.4 Projects 3.5 Written tests
4. Context of Assessment	<p>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</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>