

PRODUCE GROW OUT FISH

UNIT CODE: AQ/OS/AT/CR/04/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to produce grow out fish. It involves ability to Implement fish grow-out food safety plan, stock fish culture units with fingerlings, feed and manage them until attainment of market size. It also involves the competencies required to maintain the fish culture units, control predators and harvest fish.

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 Preventive measures for fish grow-out hazards are applied as per manual of standard operating procedures 1.4 Corrective measures for fish grow-out hazards are applied as per manual of standard operating procedures 1.5 Risk is communicated as per policies for internal and external communication
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 Tools, equipment and materials are assembled in line with task requirement 2.4 Grow out culture unit is drained to dryness 2.5 Grow out culture unit is cleaned, and minor repairs carried out based on identified faults 2.6 Grow out culture unit is limed as per the measured pH levels and soil texture

	2.7 Grow culture unit is filled with water fit for aquaculture to required depth as determined by the overflow height. 2.8 Grow out culture unit is fertilized uniformly as per the recommended fertilization rates
3. Stock grow out culture units	3.1 Stocking plan is prepared as per the capacity of the culture units to be stocked 3.2 Fingerlings are sourced from approved hatcheries 3.3 Fingerlings are transported to the farm under controlled temperatures and aeration. 3.4 Fingerlings are acclimatized based on culture unit temperatures 3.5 Fingerlings are gently released in to culture units as per the stocking plan 3.6 Stocked ponds are monitored for fingerling stress and mortalities through direct observations
4. Manage fish stock	4.1 Fish feeding plan is developed based on the cultured fish species 4.2 Fish feeds or fish feed ingredients are sourced from approved sources and handled as per food hygiene standards 4.3 Fish are fed as per the feeding plan and cultured species 4.4 Feeding ration adjustments are done based on results from periodic fish sampling and weight measurements 4.5 Fertilization of the culture units is carried out in accordance with secchi depth measurements 4.6 Water quality parameters are monitored and remedial measures undertaken in accordance with target species optimum ranges 4.7 Fish pond is fertilized based on pond's natural productivity and recommended rates of fertilization 4.8 Fish are checked for signs of stress and disease based on physical appearance and behavioral changes 4.9 Remedial measures for stressed and diseased fish are undertaken as per Food and Agriculture Organization (FAO) guidelines-Technical guidelines for

	responsible fisheries-aquaculture
5. Control fish predators and intrusive animals	5.1 <i>Fish predators and intrusive animals</i> are identified 5.2 <i>Control measures</i> for predators and intrusive animals are put in place as per identified risks
6. Harvest fish stock	6.1 Plan to harvest fish is prepared as per the identified market demand 6.2 <i>Harvesting tools, equipment and materials</i> are assembled in line with task requirement 6.3 Harvesting of fish is carried out using appropriate nets and techniques while observing good hygienic practices 6.4 Harvested fish is sorted according to size and species while observing good hygienic practices
7. Maintain grow out culture units	7.1 <i>Maintenance tools, equipment and materials</i> are assembled as per the task requirements 7.2 Grass on pond dykes is cleared periodically to ground level 7.3 Weeds in the pond are completely removed while observing good aquaculture practices 7.4 Surrounding vegetation is cleared as per best farm management practices 7.5 Pipes and drainage blockages are cleared to allow free flow of water

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:	• Physical • Chemical ○ Heavy metals • Microbial • Sick fish • Antibiotic residues • Bio-accumulation • Parasites • Viruses • Bacteria
2. Sources of hazards may include but not limited to:	• Poor feeding • Poor feed quality • Poor water quality • Human carriers • Cleaning agents • Pesticides • Industrial/ agricultural wastes
3. Preventive measures may include but not limited to:	• Good water quality • Sanitary measures • Proper use of antibiotics • Disease management • Parasite control • Use of quality feed • Good hygienic practices • Biosecurity measures • Probiotics
4. Corrective measures may include but not limited to:	• 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	• 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:	• Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, industrial mouth piece
7. Tools, equipment and materials include but not limited to:	• Measuring tape, weighing scale, wheelbarrow, pH meter, jembes, spades, rakes. Lime, fertilizer, tamper, ropes, liner repair kit
8. Grow out culture unit include but not limited to	• Earthen ponds, concrete tanks, plastic tanks, fiberglass, raceways
9. Stocking plan entails but not limited to:	• Species of fish, stocking density, source of fingerlings, stocking schedule
10. Fish predators and intrusive animals include but not limited to:	• Birds, mammals, reptiles, amphibians, invertebrates, man
11. Control measures include but not limited to:	• Clearing grass • Trimming vegetation • Traps and scarecrows • Net covers • Twines • Screens • Fencing
12. Harvesting tools, equipment and materials include but not limited to:	• Seine net, scoop net, buckets, laundry baskets, weighing scale, perforators
13. Maintenance tools, equipment and materials include but not limited to:	• Slashers, machetes, jembes, spades, wheelbarrow, rakes, gunny bags

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
- 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

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 grow out culture unit to dryness 1.3 Fertilized fish pond using the recommended rates 1.4 Acclimatized and gently released the fingerlings into culture units 1.5 Calculated accurate feed rations based on sampled weights 1.6 Positively diagnosed fish for signs of stress and disease 1.7 Put in place effective measures for control of predators and intrusive animals 1.8 Harvested fish using appropriate techniques 1.9 Maintained a clean environment within and around the production area
2. Resource Implications	The following resources must be provided: 2.1 Workplace or assessment location 2.2 PPEs 2.3 Tools, materials and equipment 2.4 Writing materials 2.5 Calculator
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral presentation 3.3 Oral questioning 3.4 Projects 3.5 Written tests
4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these or during industrial attachment. 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.