

# GROW OUT FISH PRODUCTION

**UNIT CODE:** AQ/CU/AM/CR/04/5/B

## Relationship to Occupational Standards

This unit addresses the unit of competency: Produce grow out fish

**Duration of Unit:** 234 hours

## Unit Description

This unit describes the competencies required to produce grow-out fish. It involves ability to apply food safety measures in producing grow out fish, prepare grow out facilities, stock and manage fish until attainment of market size. It also involves the competencies required to maintain the fish culture facility, control predators and harvest fish.

## Summary of Learning Outcomes

1. Apply food safety measures in producing grow out fish
2. Prepare grow out facility
3. Stock grow out facilities
4. Manage fish stock
5. Control fish predators
6. Harvest fish stock
7. Maintain grow out facilities

## Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Apply food safety measures in producing grow out fish	<ul style="list-style-type: none"><li>• Meaning of food safety</li><li>• Importance of food safety</li><li>• Principles of food safety</li><li>• Prerequisite programmes<ul style="list-style-type: none"><li>○ Meaning, importance, categories and establishment of prerequisite programmes</li><li>○ Relevant programmes in grow-out fish production</li></ul></li><li>• Hazard analysis for grow-out fish production<ul style="list-style-type: none"><li>○ Enterprise description</li><li>○ Product description</li><li>○ Layout of premises and surrounding environment</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Written tests</li><li>• Oral questioning</li><li>• Observation</li><li>• Case study</li><li>• Third Party reports</li><li>• Project</li><li>• Practical tests</li></ul>

	<ul style="list-style-type: none"> <li>○ Development of flow diagram</li> <li>○ Identification of hazards at each step of the flow diagram</li> <li>○ Describing the hazard</li> <li>○ Significance of hazards</li> <li>● Establishment of the HACCP plan for grow-out fish production <ul style="list-style-type: none"> <li>○ Identification of critical control points</li> <li>○ Procedures for setting up critical control limits</li> <li>○ Establishment monitoring procedures on the control limits</li> <li>○ Establishment of corrective actions</li> <li>○ Verification procedures</li> <li>○ Record keeping</li> <li>○ Validation procedures</li> </ul> </li> <li>● Standards and legislations in food safety on producing grow out fish</li> </ul>	
2. Prepare grow out facility	<ul style="list-style-type: none"> <li>● Use of PPEs in production of grow out fish</li> <li>● Use of grow out fish production materials, supplies, tools and equipment</li> <li>● Pond preparation <ul style="list-style-type: none"> <li>○ Pond draining</li> <li>○ Removal of bottom sediments</li> <li>○ Sun-drying</li> <li>○ Lime application</li> <li>○ Pond filling</li> <li>○ Fertilization</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Written tests</li> <li>● Oral questioning</li> <li>● Practical tests</li> </ul>
3. Stock grow out facilities	<ul style="list-style-type: none"> <li>● Safety measures to be observed</li> <li>● Preparation of stocking plan <ul style="list-style-type: none"> <li>○ Source of fingerlings</li> <li>○ Species of fish</li> <li>○ Stocking density</li> <li>○ Stocking schedule</li> </ul> </li> <li>● Handling of fingerlings</li> </ul>	<ul style="list-style-type: none"> <li>● Written tests</li> <li>● Oral questioning</li> <li>● Oral presentations</li> <li>● Practical tests</li> </ul>

	<ul style="list-style-type: none"> <li>○ Transportation</li> <li>○ Acclimatization and stocking</li> <li>● Post stocking monitoring <ul style="list-style-type: none"> <li>○ Behaviour</li> <li>○ Mortalities</li> </ul> </li> </ul>	
4. Manage fish stock	<ul style="list-style-type: none"> <li>● Fish feeding <ul style="list-style-type: none"> <li>○ Preparation of feeding plan</li> <li>○ Types of feeds</li> <li>○ Feeding methods</li> </ul> </li> <li>● Water quality management <ul style="list-style-type: none"> <li>○ Physico-chemical parameters</li> <li>○ Monitoring of water parameters</li> <li>○ Pond fertilization</li> <li>○ Corrective actions</li> </ul> </li> <li>● Disease control <ul style="list-style-type: none"> <li>○ Observing for signs of sick fish</li> <li>○ Basic remedial measures e.g. quarantine, stop feeding, partial displacement of water</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Oral questioning</li> <li>● Written tests</li> <li>● Practical tests</li> </ul>
5. Control fish predators	<ul style="list-style-type: none"> <li>● Fish predators and intrusive animals</li> <li>● Types and behaviour of predators</li> <li>● Types and behaviour of intrusive animals</li> <li>● Control measures</li> </ul>	<ul style="list-style-type: none"> <li>● Oral questioning</li> <li>● Practical tests</li> <li>● Written tests</li> <li>● Oral presentations</li> </ul>
6. Harvest fish stock	<ul style="list-style-type: none"> <li>● Use of harvesting tools, equipment and materials</li> <li>● Preliminary procedure for harvesting <ul style="list-style-type: none"> <li>○ Flushing pond with freshwater</li> <li>○ Starving fish to be harvested</li> </ul> </li> <li>● Harvesting methods</li> <li>● Handling of harvested fish <ul style="list-style-type: none"> <li>○ Sorting and grading of fish</li> <li>○ Stress minimization</li> <li>○ Observation of hygiene</li> <li>○ Short term preservation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Oral questioning</li> <li>● Practical tests</li> <li>● Written tests</li> <li>● Oral presentations</li> </ul>
7. Maintain grow out facilities	<ul style="list-style-type: none"> <li>● Use of maintenance tools, equipment and materials</li> <li>● Safety measures to be observed</li> <li>● Weed control and dyke maintenance</li> </ul>	<ul style="list-style-type: none"> <li>● Oral questioning</li> <li>● Practical tests</li> <li>● Written tests</li> <li>● Oral presentations</li> </ul>

	<ul style="list-style-type: none"><li>• Basic maintenance of grow out facility structures e.g. drainage channels, fence, cribs</li></ul>	
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### **Suggested methods of Instruction**

- Instructor led facilitation of theory
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions

### **Recommended Resources**

- Slashers, machetes, jembes, spades, wheelbarrow, rakes, measuring tape, weighing scale, wheelbarrow, pH meter, jembes, spades, rakes. Lime, fertilizer, tamper, ropes, liner repair kit, traps and scarecrows
- Gunny bags seine net, scoop net, buckets, laundry baskets, perforators, lime, fertilizer, tamper, ropes, net covers, twines, screens, fencing
- Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, industrial mouth piece