Republic of Rwanda
Ministry of Education

RTB | RWANDA TVET BOARD

FISH FARMING OPERATIONS

ANHFO503

Conduct fish farming operations

Competence

RQF Level: 5

Learning Hours 80

Credits: 8

Sector: AGRICULTURE AND FOOD PROCESSING

Trade: ANIMAL HEALTH

Module Type: Specific

Curriculum: TVET Certificate V in Animal health

Issue date: July, 2024

<table>
<tr><td>Purpose statement</td><td colspan="6">This module describes the skills, knowledge and attitude required to perform Fisheries and aquaculture. It is intended to the learners pursuing TVET Certificate V in Animal health. Upon completion of this module the learners will be able to Install aquaculture system, assist in hatching operations, perform nursery activities, grow and harvest fishes.</td></tr>
<tr><td>Learning assumed to be in place</td><td colspan="6">NA</td></tr>
<tr><td rowspan="6">Delivery modality</td><td colspan="2">Training delivery</td><td>100%</td><td colspan="2">Assessment</td><td>Total 100%</td></tr>
<tr><td colspan="2">Theoretical content</td><td>30%</td><td rowspan="4">Formative assessment</td><td>30%</td><td rowspan="4">50%</td></tr>
<tr><td colspan="2">Practical work:</td><td rowspan="3">70%</td><td rowspan="3">70%</td></tr>
<tr><td>• Group work and presentation</td><td>30%</td></tr>
<tr><td>• Individual work</td><td>40%</td></tr>
<tr><td colspan="3"></td><td colspan="2">Summative Assessment</td><td>50%</td></tr>
</table>

Elements of Competence and Performance Criteria

Elements of competence	Performance criteria
1. Install aquaculture system	**1.1.** Fish farming site is correctly selected based on fish farming system
	1.2. Materials, tools and equipment are correctly selected according to fish farming system
	1.3. Fish species are properly selected according to fish farming purpose
	1.4. Fish pond/cage/Recirculating Aquaculture System (RAS) is properly constructed based onregulations
2. Assist in hatching operations	**2.1**. Broodstock is properly handled according to the techniques

	2.2. Fish eggs are properly collected in accordance with techniques
	2.3. Eggs are adequately transported according to the techniques
	2.4. Sex reversal is correctly assisted according to the protocol
	2.5. Water quality parameters are regularly measured according to the protocol
3. Perform nursery activities	**3.1.** Fish fries are properly transported according to the techniques
	3.2. Fries are correctly fed based on feeding table
	3.3. Water quality parameters are regularly monitored in line with protocol
4. Grow fish	**4.1.** Fingerlings are adequately transported according to the protocol
	4.2. Fingerlings are effectively stocked based on species
	4.3. Fish are appropriately fed in accordance the feeding table
5. Harvest fish	**5.1.** Fish harvesting techniques are properly applied according to the fish farming system and regulations
	5.2. Fish are correctly graded according to the protocol and market demand
	5.3. Cage/Pond/RAS productivity is correctly calculated according to the harvested fish quantity
	5.4. Fish is properly eviscerated according to the protocol
	5.5. Fish are corrected stored in accordance to the protocol and regulations
	5.6. Fish are adequately processed in accordance with market demand

	5.7 Fishing techniques are properly applied according to the laws and regulations

Knowledge, Skills, and Attitude

Knowledge	Skills	Attitude
✓ Identification of tools, materials and equipment used in fisheries and aquaculture ✓ Description of anatomy and physiology of fish ✓ Identification of fish behaviors ✓ Calculation of fish pond productivity ✓ Identification of aquaculture systems ✓ Identification of common aquaculture diseases ✓ Identification of common aquaculture predators ✓ Explanation of water quality parameters ✓ Calculation of stocking density ✓ Identification of the characteristics of quality fish feeds	✓ Apply computer skills ✓ Communication Skills ✓ Analytical Skills ✓ Problem-Solving Skills ✓ Entrepreneurial skills ✓ Safety skills ✓ Disease diagnosis and treatment ✓ use of tools, materials and equipment used in Aquaculture ✓ Handle fries and fingerlings ✓ Stock fish ✓ Maintain fish pond ✓ Harvest fish in different fish farming systems ✓ Apply fishing ✓ Apply fish grading ✓ Use safety equipment ✓ Diagnose and treat fish diseases ✓ Apply biosecurity measures	✓ Being honest ✓ Being polite ✓ Being self-motivated ✓ Being decisive ✓ Be punctual ✓ Be creative ✓ Being patient ✓ Being responsible ✓ Being innovative ✓ Being flexible ✓ Being observant ✓ Being oriented to details/ attentive ✓ Being goal oriented ✓ Having self-confident ✓ Having team work spirit ✓ Having time management attitudes

✓ Identification of reporting principles		

Course content

Learning outcomes	At the end of the module the learner will be able to: 1. Install aquaculture system 2. Assist in hatching operations 3. Perform nursery activities 4. Grow of fish 5. Harvest fish
Learning outcome 1: Install aquaculture system	**Learning hours: 20**
Indicative content	

- **Introduction to aquaculture**
  - ✓ Purpose of fisheries and aquaculture
  - ✓ Advantages/benefits of aquaculture and fisheries in Rwanda
  - ✓ Identification of fish species
    - Origin
    - Growth rate
    - Size and age at stocking stage
    - Feeding behaviour
    - Ecological condition
    - susceptibility to diseases
    - Potential productivity
    - Adaptability
    - Prolificity

- ✓ Laws and regulation of fisheries and aquaculture

- **Description of materials, tools and equipment used in fisheries and aquaculture**
  - ✓ Materials,tools and equipment for nursery
  - ✓ Materials,tools and equipment for hatchery
  - ✓ Materials,tools and equipment for growing
    - In pond
    - In cage
    - In RAS (Recirculating Aquaculture system)
  - ✓ Materials,tools and equipment for fishing
- **Selection of fish species**
  - ✓ Selection criteria
    - Market value
    - Growth rate
    - Food conversion rate
    - Age
    - Maturity weight
    - Resistance to disease
    - Adaptability
- **Construction of Fish pond**
  - ✓ Select site
    - Site location
    - Soil identification
    - Water availability
  - ✓ Install pond
    - Measurement and sketching
    - Soil excavation
    - Dikes compaction
    - Inlet and outlet installation
    - Compost installation

- Pond facilities construction
- Liming and fertilization
- Water filling

- **Installation of cage**
  - ✓ Site selection
  - ✓ Water analysis
    - Chemical analysis
    - Physical analysis
    - Water depth
  - ✓ Construction
    - Construction materials
    - Measurement
    - Sketching
    - Assembling
    - Floatation structure
    - Placement of slinking system
  - ✓ Stocking
- **Install Recirculating Aquaculture System**
  - ✓ Design RAS
  - ✓ Placement of RAS facilities
  - ✓ Water filling
  - ✓ Ecosystem creation
  - ✓ Aeration

Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks ▪ Secchi disk

	▪ Fish farms ▪ Audiovisual ▪ Equipment ▪ Hatchery ▪ Equipment
Materials	▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer ▪ pH meter ▪ Scoop nets ▪ Bucket ▪ Fishes ▪ Fish feeds
Tools	▪ Thermometer ▪ Polyethylene bags ▪ Boxes ▪ Nets ▪ Ices ▪ Water ▪ Maintenance and monitoring equipment and tools ▪ Shovel ▪ Hoes ▪ Machetes ▪ Baskets ▪ Nets ▪ Traps

Facilitation techniques	Demonstration, group work, Practical works, Group discussion, Brainstorming, field visit, case study **Demonstration and/ or field visit/ case study** ▪ Trainer engages trainees in a guided tour into aquaculture system. ▪ Trainer provides instructions and engages trainees in formation of small groups and the specialist of the center demonstrate how aquaculture system is installed ▪ Trainer engages trainee in discussion where they can ask questions to deepen their understanding about installation of aquaculture system ▪ Trainer gives expert view and close the session
Formative assessment methods /(CAT)	Oral assessment ▪ Interviews ▪ Questionnaires Written assessment ▪ Matching ▪ True or false ▪ Multiple choice questions ▪ Written report ▪ Essay (short responses / extended responses) Performance assessment ▪ Observation checklist ▪ Practical task ▪ Demonstration activities ▪ Photographs/drawings interpretation/analysis ▪ Videos interpretation/analysis

Learning outcome 2: Assist in hatching operations	Learning hours: 15

Indicative content

- **Handling of broodstock**
  - ✓ Precautions
  - ✓ Handling techniques
- **Collection of fish eggs**
  - ✓ Harvesting
  - ✓ Handling
  - ✓ Identification
    - Shape
    - Size
    - Oil globules (presence or-absence)
  - ✓ Counting
- **Transport techniques of fish eggs**
- **Sex reversal**
  - ✓ Definition
  - ✓ Purpose
  - ✓ Used hormones
  - ✓ Techniques

Resources required for the learning outcome

Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks ▪ Fish farms ▪ Audiovisual equipment ▪ Hatchery equipment

Materials	▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer ▪ Fishes ▪ Fish feeds
Tools	▪ pH meter ▪ Scoop nets ▪ Secchi disk ▪ Bucket ▪ Grader ▪ Thermometer ▪ Polyethylene bags ▪ Boxes ▪ Nets ▪ Ices ▪ Oxygen meter ▪ Shovel ▪ Hoes ▪ Machetes ▪ Baskets ▪ Traps
Facilitation techniques	Demonstration, group work, Practical works, Group discussion, Brainstorming, field visit **Demonstration and/ or field visit** ▪ Trainer engages trainees in a guided tour into fish hatchery operation center.

	▪ Trainer provides instructions and engages trainees in formation of small groups and the specialist of the center demonstrate how hatchery is operating ▪ Trainer engages trainee in discussion where they can ask questions to deepen their understanding of how hatchery is operating ▪ Trainer gives expert view to the trainees and close the session
Formative assessment methods /(CAT)	Oral assessment ▪ Interviews ▪ Questionnaires Written assessment ▪ Matching ▪ True or false ▪ Multiple choice questions ▪ Written report ▪ Essay (short responses / extended responses) Performance assessment ▪ Observation checklist ▪ Practical task ▪ Demonstration activities ▪ Photographs/drawings interpretation/analysis ▪ Videos interpretation/analysis

Learning outcome 3: Perform nursery activities	**Learning hours: 15**
Indicative content	
• **Factors contributing to the growth and survival fry** ✓ Water quality parameters ✓ Feeding ✓ Species	

- **Transport of fish fries**
  - ✓ Handling
  - ✓ Transport conditions
  - ✓ Transport techniques
- **Stocking of fries**
  - ✓ Stocking precautions
  - ✓ Stocking techniques
- **Feeding of fish fries**
  - ✓ Identification of feeds
    - Natural feed
    - Artificial feed (categories, density and size)
  - ✓ Monitoring of compost
    - Color
    - Quantity
    - Make decision
  - ✓ Distribution of feeds
    - Frequency
    - Quantity
    - Methods (Automated, mechanical/manual)
- **Monitoring of water parameters**
  - ✓ Dissolved oxygen
  - ✓ Temperature
  - ✓ Turbidity
  - ✓ Acidity

Resources required for the learning outcome	
Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks ▪ Audiovisual equipment ▪ Hatchery equipment

Materials	▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer ▪ Fishes ▪ Fish feeds
Tools	▪ pH meter ▪ Scoop nets ▪ Bucket ▪ Thermometer ▪ Secchi disk ▪ Polyethylene bags ▪ Boxes ▪ Oxygen meter ▪ Grader ▪ Nets ▪ Ices ▪ Shovel ▪ Hoes ▪ Machetes ▪ Baskets ▪ Nets ▪ Traps
Facilitation techniques	Demonstration, group work, Practical works, Group discussion, Brainstorming, field visit **Demonstration and/ or field visit** ▪ Trainer engages trainees in a guided tour into fish nursery center.

	▪ Trainer provides instructions and engages trainees in formation of small groups and the specialist of the center demonstrate fish nursery activities ▪ Trainer engages trainee in discussion where they can ask questions to deepen their understanding of how fish nursery is done ▪ Trainer gives expert view to the trainees and close the session
Formative assessment methods /(CAT)	Oral assessment ▪ Interviews ▪ Questionnaires Written assessment ▪ Matching ▪ True or false ▪ Multiple choice questions ▪ Written report ▪ Problem solving ▪ Essay (short responses / extended responses) Performance assessment ▪ Observation checklist ▪ Practical task ▪ Demonstration activities ▪ Photographs/drawings interpretation/analysis ▪ Videos interpretation/analysis

Learning outcome 4: Grow fish	**Learning hours: 20**
Indicative content	
• **Fish farming systems** ✓ Extensive ✓ Semi-intensive	

- ✓ Intensive
- ✓ Integrated

- **Transport of fingerlings**
  - ✓ Handling
  - ✓ Transport conditions
  - ✓ Transport techniques
- **Stocking of fingerlings**
  - ✓ Precautions
  - ✓ Density
  - ✓ Techniques
- **Feeding of fish**
  - ✓ Identification of feeds
    - Natural feed
    - Artificial feed (categories, density and size)
  - ✓ Monitoring of compost
    - Color
    - Quantity
    - Make decision
  - ✓ Distribution of feeds
    - Frequency
    - Quantity
    - Methods (Automated, mechanical/manual)
- **Monitoring of water parameters**
  - ✓ Dissolved oxygen
  - ✓ Temperature
  - ✓ Turbidity
  - ✓ Acidity
- **Good aquaculture practices of fish farming**
  - ✓ Maintain water parameters
  - ✓ Maintain dikes
  - ✓ Control water flow
  - ✓ Clean the pond
  - ✓ Regulate population in pond

- **Raising of baby fries in aquarium**
  - ✓ Definition
  - ✓ Selection of the fries
  - ✓ Transferring of the fries
  - ✓ Monitoring water quality
  - ✓ Feeding
  - ✓ Rearing ornamental fish

- **Control of diseases and predators**
  - ✓ Identification of diseases
    - Bacterial diseases
    - Viral diseases
    - Fungal diseases
    - Parasitic diseases
  - ✓ Identification of predators
    - Amphibians
    - Reptiles
    - Voracious fish
    - Harmful birds
    - Harmful invertebrates
    - Harmful mammals
  - ✓ Application of protective measures against predators
    - Security of fish farm
    - Use trap
  - ✓ Application of preventive measures against diseases
    - Biosecurity measures
    - Chemical prevention

Resources required for the learning outcome	
Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks

	▪ Fish farms ▪ Audiovisual equipment ▪ Hatchery equipment
Materials	▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer ▪ Fishes ▪ Fish feeds
Tools	▪ Thermometer ▪ Polyethylene bags ▪ pH meter ▪ Scoop nets ▪ Bucket ▪ Oxygen meter ▪ Secchi disk ▪ Boxes ▪ Nets ▪ Ices ▪ Water ▪ Shovel ▪ Hoes ▪ Machetes ▪ Baskets ▪ Nets ▪ Traps
Facilitation techniques	Demonstration, group work, Practical works, Group discussion, Brainstorming, field visit

	Practical works and/or field visit **Practical works** ▪ Trainer brings trainees to the farm to perform some fish growing activities ▪ Trainer provides instructions about the work ▪ Trainer engages trainees in forming small groups ▪ Trainer assigns tasks to each group: 1. Transport of fingerlings 2. Stocking of fingerlings 3. Feeding of fish 4. Water quality parameters measurement ▪ Trainer monitors groups activities ▪ Trainer engages trainees in discussion about effectiveness of the work and provides feedback to close the session
Formative assessment methods /(CAT)	Oral assessment ▪ Interviews ▪ Questionnaires Written assessment ▪ Matching ▪ True or false ▪ Multiple choice questions ▪ Written report ▪ Problem solving ▪ Essay (short responses / extended responses) Performance assessment ▪ Observation checklist ▪ Practical task ▪ Demonstration activities ▪ Photographs/drawings interpretation/analysis

	▪ Videos interpretation/analysis

Learning outcome 5: Harvest fish	Learning hours: 10
Indicative content	

- **Fishing regulations**
  - ✓ Fishing area
  - ✓ Fishing nets
  - ✓ Fishing permit
- **Harvesting types**
  - ✓ Partial harvesting
  - ✓ Total/full harvesting
- **Harvesting techniques**
  - ✓ Using nets
  - ✓ Using drainage
  - ✓ Using traps
- **Handling of harvested fish**
  - ✓ Evisceration,
  - ✓ Filleted
  - ✓ Cleaning
- **Performing post-harvest activities**
  - ✓ Grading fishes
    - Small
    - Medium
    - Large
  - ✓ Select fish based on the industrial requirement
    - Species
    - Sex
    - Injury
    - Sickness
    - Weight
  - ✓ Calculate productivity

- Cage
- RAS
- Pond

✓ Storing of fish

- Drying
- Salting
- Smoking
- Cooling (chilling, freezing)

- **Application of fishing**

✓ Laws and regulations

✓ Materials, tools and equipment

✓ Fishing techniques

Resources required for the learning outcome	
Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks ▪ Fish farms ▪ Audiovisual equipment ▪ Hatchery equipment
Materials	▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer ▪ Fishes ▪ Fish feeds
Tools	▪ Thermometer ▪ pH meter

	▪ Scoop nets ▪ Bucket ▪ Polyethylene bags ▪ Secchi disk ▪ Boxes ▪ Nets ▪ Ices ▪ Water ▪ Shovel ▪ Hoes ▪ Machetes ▪ Baskets ▪ Nets ▪ Traps
Facilitation techniques	Demonstration, group work, Practical works, Group discussion, Brainstorming, field visit **Practical works and/or field visit** **Practical works** ▪ Trainer brings trainees to the farm to perform some fish harvesting activities ▪ Trainer provides instructions about the work ▪ Trainer engages trainees in forming small groups ▪ Trainer assigns tasks to each group: 1. Perform harvesting techniques 2. Handling harvesting 3. Performing post-harvest activities (grading, storing) ▪ Trainer monitors groups activities ▪ Trainer engages trainees in discussion about effectiveness of the work and provides feedback to close the session

Formative assessment methods /(CAT)	Oral assessment ▪ Interviews ▪ Questionnaires Written assessment ▪ Matching ▪ True or false ▪ Multiple choice questions ▪ Written report ▪ Problem solving ▪ Essay (short responses / extended responses) Performance assessment ▪ Observation checklist ▪ Practical task ▪ Demonstration activities ▪ Photographs/drawings interpretation/analysis ▪ Videos interpretation/analysis

Integrated/Summative assessment

Integrated situation

TWORORE AMAFI Cooperative has a fish farm located in Huye district, it received a fund from British project in order to solve the problems of fish shortage in Huye. After a deep analysis, the Cooperative decides to increase the fish production by rearing fries, fingerlings and adult fish and wants to recruit an aquaculture and fishery technician to help them achieving that goal. You are called to express your ability in fisheries and aquaculture by performing the following tasks:

1. Construct fish pond of 1m x 1.5m in 2 hours
2. Perform collection and transferring of eggs from one gravid female to the hatchery in 1 hour
3. Counting and transferring fries to the nursery in 1 hour
4. Measure water quality parameters and feeding fries in the nursery in 30 minutes
5. Counting and transferring fingerlings from nursery to the pond in 1 hour

6. Measure water quality parameters in the pond in 30 minutes
7. Feeding fingerlings in the nursery in 30 minutes
8. Harvesting and grading fish in 3 hours
9. Storing fish

All materials, tools and equipment are available at the cooperative.

Resources

Tools	▪ Thermometer ▪ Polyethylene bags ▪ Boxes ▪ pH meter ▪ Oxygen meter ▪ Grader ▪ Secchi disk ▪ Scoop nets ▪ Bucket ▪ Nets
Equipment	▪ PPE ▪ Fish pond ▪ Oxygenated Tanks ▪ Cages ▪ Water tanks
Materials/ Consumables	▪ Ices ▪ Lime ▪ Organic manure ▪ DAP fertilizer ▪ Urea ▪ NPK fertilizer

Assessable outcomes	Assessment criteria (Based on performance criteria)	Indicator	Observation		Marks allocation
			Yes	No	
1. Install aquaculture system	1.1 Fish Farming site is correctly selected based on the fish farming system	**Assessment indicator 1:** Selection of the site (soil and water identification) is done			2
	1.2 Tools, equipment and materials are correctly selected according to the fish farming system	**Assessment indicator 2:** Selection of nursery materials,tools and equipment is done			2
		Assessment indicator 3: Selection of hatching materials, tools and equipment is done			2
		Assessment indicator 4: Selection of the fish growing materials,tools and equipment (pond, cage and RAS) is done			2
	1.3. Fish species are properly selected according to the fish farming purpose	**Assessment indicator 1:** Selection of fish species based on physical characteristics and selection criteria is done			2
	1.4 Fish pond/cage/Recirculating Aquaculture System is	**Assessment indicator 1:** Fish pond installation (Soil excavation, Dikes compaction, Inlet and			2

	properly constructed based on regulations	outlet installation, Compost installation, Pond facilities construction, Liming and fertilization, Water filling) is done			
		Assessment indicator2: Evaluation of cage installation (Site selection and water analysis, Construction measurement, sketching, assembling, stocking, flotation structure, placement of slinking system) is done			2
		Assessment indicator 2: Evaluation of recirculation Installation (design, placement, water filling, ecosystem creation and aeration) is done			2
2. Assist in hatching operations	2.1 Broodstock is properly handled according to the technique	**Assessment indicator 1:** Handling of broodstock (Handling technique and precautions) is done			2
	2.2 Fish eggs are properly collected in	**Assessment indicator 1:** Harvesting /Collection of fish eggs is done			2

	accordance with technique	**Assessment indicator 2:** Egg identification (shape, size, oil globules) is done			2
		Assessment indicator 3: Egg counting is done			2
		Assessment indicator 3: Fish eggs are transported			2
	2.3 Sex reversal is correctly assisted according to the protocol	**Assessment indicator 1:** Sex reversal is done			2
	2.4 Water quality parameters are regularly measured according to the protocol	**Assessment indicator 3:** Water quality parameters (physical and chemical) are measured			2
3. Perform nursery activities	3.1 Fish Fries are properly transported according to the transport technique	**Assessment indicator 1:** Fries stocking (handling, transport conditions and facilities) is done			2
		Assessment indicator 2: Fries stocking is done			2
	3.2 Fries are correctly fed based on feeding table	**Assessment indicator 1:** Feed identification (natural and artificial feed) is done			2
		Assessment indicator 2: Weighing of feeds is done			2

		Assessment indicator 3: Compost monitoring is done			2
		Assessment indicator 4: Feed distribution is done			2
4. Grow out	4.1 Fish Fingerings are properly transported according to the transport technique	**Assessment indicator 1:** Fish farming systems (extensive, semi-intensive, intensive and integrated) is selected			2
		Assessment indicator 2: Fish fingerings are transported			2
		Assessment indicator 3: Stocking of fingerings (precautions, techniques and density) is done			2
	4.2 Fingerings are correctly fed based on feeding table	**Assessment indicator 1:** Feeding of fingerings is done			2
		Assessment indicator 2: Feed weighing is done			2
		Assessment indicator 3: Compost is monitored			2
		Assessment indicator 3: Feed is distributed			2
		Assessment indicator 4: Good practices of fish farming is done			2
		Assessment indicator 5: Raising of baby fish fry in aquarium is is done			3

	4.3 Water parameters are regularly monitored in line with protocol	**Assessment indicator 1:** Protective measures against predators is applied			3
		Assessment indicator 2: Preventive measures against diseases is applied			3
		Assessment indicator 3: Chemical prevention is done			3
5 Harvest fish	5.1 Fish are correctly graded according to the protocol and market demand	**Assessment indicator 1:** Grading is done			3
	5.2 Fish harvesting technique is properly applied according to the fish farming system and regulations	**Assessment indicator 1:** Harvesting techniques are applied			3
		Assessment indicator 2: Handling of harvested fish is done			3
	5.3 Fish is properly eviscerated according to the protocol	**Assessment indicator 2:** Fish grading is done			3
		Assessment indicator 2: Assessment of fish selection based on the industrial requirement like sex, injury and sickness			3
		Assessment indicator 2: Assessment of RAS productivity calculation based on farming in cage or in pond			3
		Assessment indicator 1: Fish drying is done			3

	5.4 Fish are corrected stored in accordance to the protocol and regulations	**Assessment indicator 2:** Salting is done			3
		Assessment indicator 2: Smoking is done			3
		Assessment indicator 2: Cooling (chilling, freezing) is done			3
Total marks					100
Percentage Weightage					100%
Minimum Passing line % (Aggregate):					70%

Reference

1. ARRIGNON J.C.V,2008, The Tropical Agriculturalist TILAPIA, CTA Macmillan, Malaysia,78p
2. RUTAISIRE J. &al., 2009, Fish farming as a business, Fountain Publishers, Kampala, 209p.
3. WDA,2011, Animal Husbandry-4th year, technical booklet Professional Agricultural Education/Agronomy option, Kigali, 29p
4. Carballo E. & al., 2008, Small Scale freshwater fish farming, Agrodok 15, Agromisa Foundation and CTA, Wageningen, 84p
5. Ngugi C., C.& al., A new guide to fish farming in Kenya, USAID, CRSP,95p.
6. http://www.fao.org/fishery/static/FAO_Training/FAO_Training/General/x6709e/x6709e10.htm
7. https://www.afcd.gov.hk/english/fisheries/fish_aqu/fish_aqu_techsup/files/common/Series1_FishFeedManagement.pdf
8. http://www.fao.org/3/X5085E/X5085E06.htm
9. JK Ofori, HR Dankwa, R Brummett and EK Abban. 2009. Producing Tilapia in Small Cage in West Africa. WorldFish Center Technical Manual No. 95. The WorldFish Center, Penang, Malaysia. 16 pp.
10. Charles C. Ngugi, James R. Bowman,Bethuel O.Omolo. 2007.A New Guide to Fish Farming in Kenya.
11. Yves FERMON.2008. Subsistence fish farming in Africa: a technical manual.

12. WRC REPORT NO. TT 463/P/10. 2010. A MANUAL FOR RURAL FRESHWATER AQUACULTURE.

13. FAO. 2017.Doing aquaculture as a business for small-and medium-scale farmers. Practical training manual by Nathanael Hishamunda, ElisabettaMartone, and Ana Menezes.

14. Carole Labrousse, Frederic Jozwiak. 2013. Tilapia Farming in Mozambique. Development of a small-scale tilapia farm to improve the livelihoods and nutritional diet of an isolated community in Niassa Province.

15. FAO. 2003. Fish Pond Construction and management. A field guide and extension manual.

16. ACMS. 2019. Tilapia Farming Training Workshop. J.B. Kabagambe. 2014. Ubworozi bw'amafi mu byuzi. A fish farmer booklet.

17. FAO Training Series. Monitoring, record keeping, accounting and marketing ftp://ftp.fao.org/fi/cdrom/fao_training/FAO_Training/General/x6709e/Index.htm