

Qualification Pack



Aquaculture Technical Supervisor

Options: Biofloc Technology/ RAS Technology

QP Code: AGR/Q4903

Version: 3.0

NSQF Level: 5

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AGR/Q4903: Aquaculture Technical Supervisor

Brief Job Description

An Aquaculture Technical Supervisor is responsible for ensuring the preparation of the pond for aquaculture, maintaining a healthy growth of the cultured species and harvesting them using the recommended methods. The person may also use the biofloc and Recirculating Aquaculture System (RAS) technologies.

Personal Attributes

The individual must have good physical stamina to work for long hours and know how to swim. The person must have good planning, communication, and organisational skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [AGR/N4916: Undertake the pond preparation activities](#)
2. [AGR/N4917: Carry out aquaculture operations](#)
3. [AGR/N4918: Ensure health, hygiene and safety during culture operations](#)
4. [DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

Options(Not mandatory):

Option 1: Biofloc Technology

This OS unit is about constructing a biofloc tank and carrying out fish culture in it.

1. [AGR/N4959: Culture fish using the biofloc technology](#)

Option 2: RAS Technology

This OS unit is about setting up a Recirculating Aquaculture System (RAS) to filter and reuse water in fish rearing.

1. [AGR/N4960: Set up and use the Recirculating Aquaculture System](#)

Qualification Pack (QP) Parameters

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Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
Country	India
NSQF Level	5
Credits	20
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification & Experience	Completed 2nd year of UG (UG Diploma) OR Pursuing 2nd year of UG (and continuous education) OR Completed 2nd year diploma after 12th OR Pursuing 2nd year of 2-year diploma after 12th OR 12th pass with 1 year Vocational Education & training (NTC or NAC or CITS) OR Completed 3 year diploma after 10th with 1 Year of experience relevant experience OR 12th grade Pass with 2 Years of experience relevant experience OR 10th grade pass with 4 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 4 and with minimum education as 8th Grade pass) with 3 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 4.5 with 1.5- year relevant experience)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	30/04/2025

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NSQC Approval Date	30/12/2021
Version	3.0
Reference code on NQR	QG-05-AG-00290-2023-V1.1-ASCI
NQR Version	1.1

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AGR/N4916: Undertake the pond preparation activities

Description

This OS unit is about carrying out pond preparation activities to ensure correct water intake and pre-stocking.

Scope

The scope covers the following :

- Prepare the pond for aquaculture
- Carry out pre-stocking and stocking activities
- Optimise resource utilisation

Elements and Performance Criteria

Prepare the pond for aquaculture

To be competent, the user/individual on the job must be able to:

- PC1.** co-ordinate with an authorised lab to test the level of organic matters and pH in the soil sample collected from the culture pond
- PC2.** instruct the workers to apply basal manure, lime, gypsum or any other necessary soil treatment in the recommended quantity to improve the soil fertility as advised by the lab
- PC3.** instruct the workers to use the appropriate Personal Protective Equipment (PPE) while applying chemicals in the pond
- PC4.** arrange for de-mudding to be carried out in the pond
- PC5.** instruct the workers to drain out and sun-dry the perennial pond
- PC6.** arrange for dykes of recommended height to be constructed at the pond
- PC7.** ensure inlet and outlet pipes are installed in the pond for efficient entry and exit of the water
- PC8.** ensure the aquatic weed is removed from the pond
- PC9.** arrange for the water to be treated with appropriate treatment such as chlorine and stored in the reservoir
- PC10.** ensure the culture pond is filled with treated water to the required level

Carry out pre-stocking and stocking activities

To be competent, the user/individual on the job must be able to:

- PC11.** select the appropriate methods to eradicate predatory and weed fish from the pond
- PC12.** select an appropriate method to apply lime and recommended fertilisers in the pond at different stages of culture operations
- PC13.** arrange for the appropriate treatment to be applied for controlling aquatic insects before stocking seeds
- PC14.** arrange for the seeds to be acclimatised before stocking
- PC15.** instruct the workers to stock the seeds maintaining the recommended density, depth and species ratio for the species to be cultured

Optimise resource utilisation

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To be competent, the user/individual on the job must be able to:

- PC16.** instruct the workers to follow the recommended practices to reduce the loss of water from the culture pond
- PC17.** ensure lime or other approved disinfectant is used to treat the wastewater for recycling
- PC18.** check the quality parameters of the treated water for its suitability for re-use
- PC19.** arrange for the recycled water to be used for the appropriate culture practices
- PC20.** optimise the usage of water and relevant materials in various tasks and processes, ensuring the workers also do the same

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the process of collecting soil sample from the culture pond and getting the levels of organic matters and pH tested through a soil-testing lab
- KU2.** the process of de-mudding, draining and sun drying the pond
- KU3.** the process of constructing dykes in the pond and installing inlet and outlet pipes for efficient entry and exit of the water
- KU4.** appropriate treatment to be applied to the soil such as basal manure, lime and gypsum to improve its fertility
- KU5.** the recommended dose of soil treatment to be applied and a suitable method of applying it
- KU6.** the importance of using the appropriate Personal Protective Equipment (PPE) for applying chemicals in the pond
- KU7.** the process of removing aquatic weed from the pond
- KU8.** the process of treating water with chlorine
- KU9.** the importance of ensuring an optimum level of water, depth and stocking density for the species to be cultured in the culture pond
- KU10.** methods of eradicating and controlling aquatic insects, predatory and weed fish from the pond
- KU11.** different types of fertilizers to be applied in the pond at different stages of culture operations
- KU12.** the process of stocking seeds after due acclimatisation maintaining appropriate density and species ratio
- KU13.** recommended practices to reduce the loss of water from the culture pond
- KU14.** the process of using lime and other approved disinfectants to treat the wastewater for recycling
- KU15.** quality parameters to be checked to ensure treated water is suitable for re-use
- KU16.** use of recycled water for appropriate culture practices
- KU17.** common practices of water conservation such as rainwater harvesting
- KU18.** the importance of following environmental and ecological best practices
- KU19.** the benefits of resource optimisation
- KU20.** common practices of conserving electricity

Generic Skills (GS)

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User/individual on the job needs to know how to:

- GS1.** maintain work-related notes and records
- GS2.** read the relevant literature to get updated information about the field of work
- GS3.** communicate politely and professionally
- GS4.** listen attentively to understand the information being given
- GS5.** co-ordinate with the co-workers to achieve the work objectives
- GS6.** take quick decisions to deal with workplace emergencies/ accidents
- GS7.** prepare a work plan and schedule tasks to ensure timely completion of work
- GS8.** evaluate all possible solutions to a problem to select the best one
- GS9.** identify possible disruptions to work and take appropriate preventive measures

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare the pond for aquaculture</i>	12	16	-	12
PC1. co-ordinate with an authorised lab to test the level of organic matters and pH in the soil sample collected from the culture pond	-	-	-	-
PC2. instruct the workers to apply basal manure, lime, gypsum or any other necessary soil treatment in the recommended quantity to improve the soil fertility as advised by the lab	-	-	-	-
PC3. instruct the workers to use the appropriate Personal Protective Equipment (PPE) while applying chemicals in the pond	-	-	-	-
PC4. arrange for de-mudding to be carried out in the pond	-	-	-	-
PC5. instruct the workers to drain out and sun-dry the perennial pond	-	-	-	-
PC6. arrange for dykes of recommended height to be constructed at the pond	-	-	-	-
PC7. ensure inlet and outlet pipes are installed in the pond for efficient entry and exit of the water	-	-	-	-
PC8. ensure the aquatic weed is removed from the pond	-	-	-	-
PC9. arrange for the water to be treated with appropriate treatment such as chlorine and stored in the reservoir	-	-	-	-
PC10. ensure the culture pond is filled with treated water to the required level	-	-	-	-
<i>Carry out pre-stocking and stocking activities</i>	10	12	-	8
PC11. select the appropriate methods to eradicate predatory and weed fish from the pond	-	-	-	-
PC12. select an appropriate method to apply lime and recommended fertilisers in the pond at different stages of culture operations	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. arrange for the appropriate treatment to be applied for controlling aquatic insects before stocking seeds	-	-	-	-
PC14. arrange for the seeds to be acclimatised before stocking	-	-	-	-
PC15. instruct the workers to stock the seeds maintaining the recommended density, depth and species ratio for the species to be cultured	-	-	-	-
<i>Optimise resource utilisation</i>	8	12	-	10
PC16. instruct the workers to follow the recommended practices to reduce the loss of water from the culture pond	-	-	-	-
PC17. ensure lime or other approved disinfectant is used to treat the wastewater for recycling	-	-	-	-
PC18. check the quality parameters of the treated water for its suitability for re-use	-	-	-	-
PC19. arrange for the recycled water to be used for the appropriate culture practices	-	-	-	-
PC20. optimise the usage of water and relevant materials in various tasks and processes, ensuring the workers also do the same	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4916
NOS Name	Undertake the pond preparation activities
Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
NSQF Level	5
Credits	3
Version	2.0
Next Review Date	30/12/2024

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AGR/N4917: Carry out aquaculture operations

Description

This OS unit is about carrying out aquaculture operations after stocking seed in the pond.

Scope

The scope covers the following :

- Carry out post-stocking activities
- Perform nutrition management
- Perform disease management
- Supervise harvesting and post-harvest management
- Perform waste management

Elements and Performance Criteria

Carry out post-stocking activities

To be competent, the user/individual on the job must be able to:

- PC1.** arrange for appropriate type and dosage of manure, fertilizer and lime to be applied in the pond
- PC2.** ensure periodic sampling of the soil, water and fish
- PC3.** perform netting for efficient management of fish
- PC4.** ensure aeration and water replenishment in the culture pond at the recommended intervals

Perform nutrition management

To be competent, the user/individual on the job must be able to:

- PC5.** identify the feed requirement of the cultured species at various stages of their growth
- PC6.** procure prepared feed or the necessary feed ingredients in the required quantity
- PC7.** determine the dose of supplementary feed and instruct the workers to carry out split feeding as per the requirement
- PC8.** ensure the stocked culture species are fed with wet feed/ floating feed/ pellets containing the required nutrients such as protein and supplementary feed ingredients
- PC9.** check that the recommended feeding schedule for different culture species is followed
- PC10.** identify rancidity in feed and arrange for rancid feed to be disposed appropriately

Perform disease management

To be competent, the user/individual on the job must be able to:

- PC11.** implement the recommended preventive and prophylactic measures in the culture pond
- PC12.** check the pond to identify diseased or dying fish
- PC13.** coordinate with a fish disease expert to diagnose the disease and appropriate treatment
- PC14.** instruct the workers to separate the diseased fish from the healthy fish and put them in a quarantine tank to prevent disease outbreak
- PC15.** follow the recommended therapeutic practices based on the type and severity of disease/ infection

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PC16. monitor the condition of fish in the quarantine tank for signs of improvement

Supervise harvesting and post-harvest management

To be competent, the user/individual on the job must be able to:

PC17. check the fish stocked in the pond to identify its maturity

PC18. select an appropriate time to harvest the cultured fish

PC19. instruct the workers to use nets of appropriate mesh size to harvest the cultured fish

PC20. follow the recommended method for partial/ complete harvesting

PC21. arrange for the harvested stock to be stored at the recommended temperature, Relative Humidity (RH) and hygienic conditions

PC22. follow the recommended practices to ensure minimum handling of the stock between harvesting and transportation

PC23. arrange for the harvested fish to be stored in appropriate containers/ tanks for transportation, ensuring minimum stress during transit

Perform waste management

To be competent, the user/individual on the job must be able to:

PC24. segregate waste into appropriate categories

PC25. ensure that non-recyclable waste is disposed appropriately

PC26. arrange for the recyclable and reusable materials to be recycled

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the appropriate type and dosage of manure, fertilizer and lime to be applied in the culture pond

KU2. the process of sampling the soil, water and fish

KU3. the process of netting for efficient management of the crop

KU4. the importance and process of aerating and replenishing water in the culture pond

KU5. feed requirement of various culture species at various stages of their growth

KU6. the importance of maintaining adequate stock of fish feed

KU7. how to determine the dose of supplementary feed and the practice of split feeding

KU8. different types of fish feed such as wet feed/ floating feed/ pellet feed

KU9. the importance of maintaining the required nutrients such as protein in the feed and following the feeding schedule

KU10. various preventive and prophylactic measures to implement in the culture pond to control disease among fish

KU11. the signs of problem/disease among fish in the pond

KU12. how to separate the diseased fish from the healthy fish and quarantine them to prevent disease outbreak

KU13. relevant therapeutic practices based on the type and severity of disease/ infection

KU14. the signs of improvement in the quarantined fish

KU15. maturity indicators of the fish to check its readiness for being harvested

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- KU16.** the appropriate time and method of harvesting the cultured species using the nets of different mesh size
- KU17.** the recommended method for partial/ complete harvesting
- KU18.** recommended temperature, relative humidity and hygienic conditions for storing various harvested species
- KU19.** various recommended practices to ensure minimum handling of the stock between harvesting and transportation
- KU20.** appropriate containers/ tanks for transporting the harvested fish ensuring minimum stress to it during transit
- KU21.** the criteria for segregating waste into appropriate categories
- KU22.** different methods of recycling and disposing waste

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write work-related notes
- GS2.** communicate politely and professionally
- GS3.** read the relevant literature to learn about the latest developments in the field of work
- GS4.** listen attentively to understand the information/ instructions being shared by the speaker
- GS5.** plan and prioritise tasks to ensure timely completion
- GS6.** co-ordinate with co-workers to achieve work objectives
- GS7.** evaluate all possible solutions to a problem to select the best one
- GS8.** identify possible disruptions to work and take appropriate preventive measures
- GS9.** take quick decisions to deal with workplace emergencies/ accidents

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out post-stocking activities</i>	6	10	-	4
PC1. arrange for appropriate type and dosage of manure, fertilizer and lime to be applied in the pond	-	-	-	-
PC2. ensure periodic sampling of the soil, water and fish	-	-	-	-
PC3. perform netting for efficient management of fish	-	-	-	-
PC4. ensure aeration and water replenishment in the culture pond at the recommended intervals	-	-	-	-
<i>Perform nutrition management</i>	6	8	-	6
PC5. identify the feed requirement of the cultured species at various stages of their growth	-	-	-	-
PC6. procure prepared feed or the necessary feed ingredients in the required quantity	-	-	-	-
PC7. determine the dose of supplementary feed and instruct the workers to carry out split feeding as per the requirement	-	-	-	-
PC8. ensure the stocked culture species are fed with wet feed/ floating feed/ pellets containing the required nutrients such as protein and supplementary feed ingredients	-	-	-	-
PC9. check that the recommended feeding schedule for different culture species is followed	-	-	-	-
PC10. identify rancidity in feed and arrange for rancid feed to be disposed appropriately	-	-	-	-
<i>Perform disease management</i>	6	8	-	6
PC11. implement the recommended preventive and prophylactic measures in the culture pond	-	-	-	-
PC12. check the pond to identify diseased or dying fish	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. coordinate with a fish disease expert to diagnose the disease and appropriate treatment	-	-	-	-
PC14. instruct the workers to separate the diseased fish from the healthy fish and put them in a quarantine tank to prevent disease outbreak	-	-	-	-
PC15. follow the recommended therapeutic practices based on the type and severity of disease/ infection	-	-	-	-
PC16. monitor the condition of fish in the quarantine tank for signs of improvement	-	-	-	-
<i>Supervise harvesting and post-harvest management</i>	8	8	-	10
PC17. check the fish stocked in the pond to identify its maturity	-	-	-	-
PC18. select an appropriate time to harvest the cultured fish	-	-	-	-
PC19. instruct the workers to use nets of appropriate mesh size to harvest the cultured fish	-	-	-	-
PC20. follow the recommended method for partial/ complete harvesting	-	-	-	-
PC21. arrange for the harvested stock to be stored at the recommended temperature, Relative Humidity (RH) and hygienic conditions	-	-	-	-
PC22. follow the recommended practices to ensure minimum handling of the stock between harvesting and transportation	-	-	-	-
PC23. arrange for the harvested fish to be stored in appropriate containers/ tanks for transportation, ensuring minimum stress during transit	-	-	-	-
<i>Perform waste management</i>	4	6	-	4
PC24. segregate waste into appropriate categories	-	-	-	-
PC25. ensure that non-recyclable waste is disposed appropriately	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. arrange for the recyclable and reusable materials to be recycled	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4917
NOS Name	Carry out aquaculture operations
Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
NSQF Level	5
Credits	3
Version	3.0
Last Reviewed Date	NA
Next Review Date	30/12/2024
NSQC Clearance Date	30/12/2021

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AGR/N4918: Ensure health, hygiene and safety during culture operations

Description

This OS unit is about maintaining health, hygiene and safety during the culture operations.

Scope

The scope covers the following :

- Ensure the upkeep of water body, tools and equipment
- Maintain personal hygiene and safety
- Maintain the health of cultured organisms

Elements and Performance Criteria

Ensure the upkeep of water body, tools and equipment

To be competent, the user/individual on the job must be able to:

- PC1.** ensure the necessary practices are followed to protect the aquaculture farm and dykes from erosion and natural calamities such as flood and storms
- PC2.** ensure protection of the cultured organisms from water/ air/ fomite borne diseases and contamination from handling
- PC3.** identify and eliminate common predators and preying organisms from the water body
- PC4.** ensure fences are erected to protect the water body from external threats
- PC5.** restrict the entry of unauthorised persons into the aquaculture area
- PC6.** follow the recommended practices to prevent the escape of cultured organisms from the culture pond/ tank
- PC7.** conduct regular tests to ensure the appropriate soil and water quality parameters are maintained in the water body
- PC8.** ensure all the nets, vessels, tools and equipment are cleaned and de-contaminated regularly

Maintain personal hygiene and safety

To be competent, the user/individual on the job must be able to:

- PC9.** ensure basic safety checks are undertaken before the operation of any tools and equipment
- PC10.** ensure the use of relevant Personal Protective Equipment (PPE) during various aquaculture operations
- PC11.** use the recommended soap/ sanitiser to sanitise the hands and ensure the other personnel also use it
- PC12.** follow the standard procedures to deal with accidents and emergencies
- PC13.** use the first-aid kit to provide appropriate treatment in case of any injuries
- PC14.** co-ordinate with the emergency services for further medical attention

Maintain the health of cultured organisms

To be competent, the user/individual on the job must be able to:

- PC15.** follow the recommended prophylactic measures and ensure hygienic conditions during all the stages of growth of the cultured organisms

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- PC16.** examine the cultured organisms regularly to detect the symptoms of parasites, pathogenic infections, phenotypic disorders, etc.
- PC17.** ensure the necessary medicines/ chemicals are applied as per prescription, maintaining the toxicity levels within the prescribed limits
- PC18.** use the recommended therapeutic practices in combination with the prescribed treatment for the speedy recovery of the diseased organisms
- PC19.** identify a quarantine area and arrange for the diseased organisms to be quarantined and treated
- PC20.** co-ordinate with an expert to deal with unexpected disease outbreak among the cultured organisms
- PC21.** ensure timely removal of the dead and moribund organisms from the water body
- PC22.** arrange for safe disposal of the dead and diseased organisms

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various practices to protect the aquaculture farm and dykes from erosion and natural calamities
- KU2.** how to protect the cultured organisms from water/ air/ fomite borne diseases and contamination from handling
- KU3.** the process of identifying and eliminating common predators and preying organisms in the water body
- KU4.** the importance of fencing to protect the water body from external threats
- KU5.** how to prevent the escape of cultured organisms from the culture pond/ tank
- KU6.** the importance and process of conducting regular tests to maintain the recommended soil and water quality parameters in the water body
- KU7.** the importance of cleaning and de-contaminating the nets, vessels, tools and equipment
- KU8.** basic safety checks to be undertaken before operating any tools and equipment
- KU9.** use of the relevant PPE during various aquaculture operations
- KU10.** standard procedures to deal with accidents and emergencies
- KU11.** how to administer first-aid and request further medical attention
- KU12.** recommended prophylactic measures to prevent disease among cultured organisms
- KU13.** the process of examining the cultured organisms to detect the symptoms of parasites, pathogenic infections, phenotypic disorders, etc.
- KU14.** the process of applying medicines/ chemicals while maintaining the toxicity levels within the prescribed limits
- KU15.** use of the various therapeutic practices in combination with the prescribed treatments for the speedy recovery of the diseased organisms
- KU16.** the process of identifying diseased organisms, quarantining and treating them
- KU17.** the importance and process of removing and disposing the dead and moribund organisms from the water body

Generic Skills (GS)

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User/individual on the job needs to know how to:

- GS1.** maintain work-related notes and records
- GS2.** read the relevant literature to get latest updates about the field of work
- GS3.** listen attentively to understand the information being shared by the speaker
- GS4.** communicate politely and professionally
- GS5.** co-ordinate with co-workers to achieve work objectives
- GS6.** plan and prioritise tasks to ensure timely completion
- GS7.** evaluate all possible solutions to a problem to select the best one
- GS8.** identify possible disruptions to work and take appropriate preventive measures
- GS9.** take quick decisions to deal with workplace emergencies/ accidents

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure the upkeep of water body, tools and equipment</i>	10	12	-	8
PC1. ensure the necessary practices are followed to protect the aquaculture farm and dykes from erosion and natural calamities such as flood and storms	-	-	-	-
PC2. ensure protection of the cultured organisms from water/ air/ fomite borne diseases and contamination from handling	-	-	-	-
PC3. identify and eliminate common predators and preying organisms from the water body	-	-	-	-
PC4. ensure fences are erected to protect the water body from external threats	-	-	-	-
PC5. restrict the entry of unauthorised persons into the aquaculture area	-	-	-	-
PC6. follow the recommended practices to prevent the escape of cultured organisms from the culture pond/ tank	-	-	-	-
PC7. conduct regular tests to ensure the appropriate soil and water quality parameters are maintained in the water body	-	-	-	-
PC8. ensure all the nets, vessels, tools and equipment are cleaned and de-contaminated regularly	-	-	-	-
<i>Maintain personal hygiene and safety</i>	10	12	-	12
PC9. ensure basic safety checks are undertaken before the operation of any tools and equipment	-	-	-	-
PC10. ensure the use of relevant Personal Protective Equipment (PPE) during various aquaculture operations	-	-	-	-
PC11. use the recommended soap/ sanitiser to sanitise the hands and ensure the other personnel also use it	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. follow the standard procedures to deal with accidents and emergencies	-	-	-	-
PC13. use the first-aid kit to provide appropriate treatment in case of any injuries	-	-	-	-
PC14. co-ordinate with the emergency services for further medical attention	-	-	-	-
<i>Maintain the health of cultured organisms</i>	10	16	-	10
PC15. follow the recommended prophylactic measures and ensure hygienic conditions during all the stages of growth of the cultured organisms	-	-	-	-
PC16. examine the cultured organisms regularly to detect the symptoms of parasites, pathogenic infections, phenotypic disorders, etc.	-	-	-	-
PC17. ensure the necessary medicines/ chemicals are applied as per prescription, maintaining the toxicity levels within the prescribed limits	-	-	-	-
PC18. use the recommended therapeutic practices in combination with the prescribed treatment for the speedy recovery of the diseased organisms	-	-	-	-
PC19. identify a quarantine area and arrange for the diseased organisms to be quarantined and treated	-	-	-	-
PC20. co-ordinate with an expert to deal with unexpected disease outbreak among the cultured organisms	-	-	-	-
PC21. ensure timely removal of the dead and moribund organisms from the water body	-	-	-	-
PC22. arrange for safe disposal of the dead and diseased organisms	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4918
NOS Name	Ensure health, hygiene and safety during culture operations
Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
NSQF Level	5
Credits	1
Version	2.0
Next Review Date	11/08/2025

Qualification Pack

DGT/VSQ/N0103: Employability Skills (90 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

- PC1.** understand the significance of employability skills in meeting the current job market requirement and future of work
- PC2.** identify and explore learning and employability relevant portals
- PC3.** research about the different industries, job market trends, latest skills required and the available opportunities

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

- PC4.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC5.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

- PC6.** recognize the significance of 21st Century Skills for employment

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- PC7.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life
- PC8.** adopt a continuous learning mindset for personal and professional development

Basic English Skills

To be competent, the user/individual on the job must be able to:

- PC9.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC10.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC11.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

- PC12.** identify career goals based on the skills, interests, knowledge, and personal attributes
- PC13.** prepare a career development plan with short- and long-term goals

Communication Skills

To be competent, the user/individual on the job must be able to:

- PC14.** follow verbal and non-verbal communication etiquette while communicating in professional and public settings
- PC15.** use active listening techniques for effective communication
- PC16.** communicate in writing using appropriate style and format based on formal or informal requirements
- PC17.** work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

- PC18.** communicate and behave appropriately with all genders and PwD
- PC19.** escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

- PC20.** identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.
- PC21.** carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook
- PC22.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC23.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

- PC24.** operate digital devices and use their features and applications securely and safely
- PC25.** carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.
- PC26.** display responsible online behaviour while using various social media platforms

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- PC27.** create a personal email account, send and process received messages as per requirement
- PC28.** carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications
- PC29.** utilize virtual collaboration tools to work effectively

Entrepreneurship

To be competent, the user/individual on the job must be able to:

- PC30.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC31.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC32.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

- PC33.** identify different types of customers and ways to communicate with them
- PC34.** identify and respond to customer requests and needs in a professional manner
- PC35.** use appropriate tools to collect customer feedback
- PC36.** follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

- PC37.** create a professional Curriculum vitae (Résumé)
- PC38.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC39.** apply to identified job openings using offline /online methods as per requirement
- PC40.** answer questions politely, with clarity and confidence, during recruitment and selection
- PC41.** identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** need for employability skills and different learning and employability related portals
- KU2.** various constitutional and personal values
- KU3.** different environmentally sustainable practices and their importance
- KU4.** Twenty first (21st) century skills and their importance
- KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
- KU6.** importance of career development and setting long- and short-term goals
- KU7.** about effective communication
- KU8.** POSH Act
- KU9.** Gender sensitivity and inclusivity
- KU10.** different types of financial institutes, products, and services

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- KU11.** components of salary and how to compute income and expenditure
- KU12.** importance of maintaining safety and security in offline and online financial transactions
- KU13.** different legal rights and laws
- KU14.** different types of digital devices and the procedure to operate them safely and securely
- KU15.** how to create and operate an e- mail account
- KU16.** use applications such as word processors, spreadsheets etc.
- KU17.** how to identify business opportunities
- KU18.** types and needs of customers
- KU19.** how to apply for a job and prepare for an interview
- KU20.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write different types of documents/instructions/correspondence in English and other languages
- GS2.** communicate effectively using appropriate language in formal and informal settings
- GS3.** behave politely and appropriately with all to maintain effective work relationship
- GS4.** how to work in a virtual mode, using various technological platforms
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
PC2. identify and explore learning and employability relevant portals	-	-	-	-
PC3. research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
<i>Constitutional values – Citizenship</i>	1	1	-	-
PC4. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC5. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
PC6. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC7. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
PC8. adopt a continuous learning mindset for personal and professional development	-	-	-	-
<i>Basic English Skills</i>	3	4	-	-
PC9. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC11. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-
PC12. identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
PC13. prepare a career development plan with short- and long-term goals	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC14. follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
PC15. use active listening techniques for effective communication	-	-	-	-
PC16. communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
PC17. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	1	-	-
PC18. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC19. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC20. identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
PC21. carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC23. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	5	-	-
PC24. operate digital devices and use their features and applications securely and safely	-	-	-	-
PC25. carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
PC26. display responsible online behaviour while using various social media platforms	-	-	-	-
PC27. create a personal email account, send and process received messages as per requirement	-	-	-	-
PC28. carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
PC29. utilize virtual collaboration tools to work effectively	-	-	-	-
<i>Entrepreneurship</i>	2	3	-	-
PC30. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC31. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC32. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC33. identify different types of customers and ways to communicate with them	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. identify and respond to customer requests and needs in a professional manner	-	-	-	-
PC35. use appropriate tools to collect customer feedback	-	-	-	-
PC36. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC37. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC38. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC39. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC40. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC41. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0103
NOS Name	Employability Skills (90 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	5
Credits	3
Version	1.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025

Qualification Pack

AGR/N4959: Culture fish using the biofloc technology

Description

This OS unit is about setting up a biofloc tank and carrying out fish culture in it.

Scope

The scope covers the following :

- Arrange the required resources
- Set up the biofloc tank
- Prepare for stocking the seeds
- Stock the seeds
- Perform nutrition management
- Perform disease management
- Carry out harvesting and post-harvest management

Elements and Performance Criteria

Arrange the required resources

To be competent, the user/individual on the job must be able to:

- PC1.** identify various materials required for constructing a biofloc tank such as PVC tarpaulin, binding wires, PVC pipes, elbows, ball valves, pipe end cap, etc.
- PC2.** select a vendor for purchasing the material based on the quality and price of the material
- PC3.** purchase the material as per the requirement and store them safely

Set up the biofloc tank

To be competent, the user/individual on the job must be able to:

- PC4.** select a site with the required temperature and sunlight exposure for the construction of biofloc tank
- PC5.** prepare the design of biofloc tank in an appropriate shape as per the quantity of fish to be cultured
- PC6.** set up the biofloc tank using the recommended material and as per the prepared design
- PC7.** set up water outlets for removing the sludge and other solid waste from the biofloc tank
- PC8.** install the aerator pumps, air cylinder, air diffusers, air pipes, air controllers and ball valves

Prepare for stocking the seeds

To be competent, the user/individual on the job must be able to:

- PC9.** treat the water with chlorine or an appropriate disinfectant before filling in the biofloc tank
- PC10.** fill in the biofloc tank with treated water to the recommended level
- PC11.** apply the necessary treatment in the water such as raw salt to adjust the TDS and pH levels
- PC12.** apply the recommended probiotics and immuno-stimulants in the recommended quantity

Stock the seeds

To be competent, the user/individual on the job must be able to:

- PC13.** select the fish species suitable for biofloc aquaculture

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- PC14.** calculate the optimum stocking density for the selected fish species
- PC15.** procure healthy seed stock of the selected fish species
- PC16.** sanitise the fish seed stock before stocking in the biofloc tank
- PC17.** stock the fish seed in the biofloc tank maintaining the required stocking density

Perform nutrition management

To be competent, the user/individual on the job must be able to:

- PC18.** identify the feed requirement of the stocked fish and feed them maintaining the required level of nutrients
- PC19.** follow the recommended practices to maintain the feed conversion ratio
- PC20.** add dietary supplements in the feed as per the requirement

Perform disease management

To be competent, the user/individual on the job must be able to:

- PC21.** implement the necessary preventive measures as per the biofloc technology to control disease and insects in the biofloc tank
- PC22.** carry out regular sampling of the fish in the tank to ensure its optimum growth and identify signs of disease and stress
- PC23.** quarantine the diseased fish in a separate tank
- PC24.** apply the recommended treatment to treat the diseased fish

Carry out harvesting and post-harvest management

To be competent, the user/individual on the job must be able to:

- PC25.** check the maturity indicators of the fish stocked in the tank
- PC26.** harvest the fish partially or completely using the recommended method
- PC27.** perform icing of the fish after being harvested
- PC28.** store the harvested fish under the recommended temperature and Relative Humidity (RH)
- PC29.** pack the harvested fish in appropriate container ensuring hygiene
- PC30.** arrange an appropriate mode of transport to transport the fish to the target market, ensuring minimum stress and damage to the fish during transit
- PC31.** implement the relevant measures to minimise the extent of manual handling of the fish
- PC32.** maintain the record of the fish raised and harvested using the biofloc technology

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various materials required for constructing a biofloc tank such as bricks, binding wires, PVC pipes, elbows, ball valves, pipe end cap, tarpaulin, etc.
- KU2.** the criteria for selecting a site for the construction of a biofloc tank such as adequate sunlight exposure and temperature
- KU3.** the process of designing and setting up the biofloc tank
- KU4.** how to set up the water outlets for removing the sludge and other solid waste from the biofloc tank
- KU5.** the process of installing the aerator pumps, air cylinder, air diffusers, air pipes, air controllers and ball valves

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- KU6.** the process of treating the water with chlorine or other appropriate disinfectants before filling in the biofloc tank
- KU7.** various pre-stocking activities
- KU8.** necessary treatment to be applied to adjust the TDS and pH levels in the water such as adding raw salt
- KU9.** use of probiotics and immune-stimulants
- KU10.** fish species suitable for biofloc aquaculture
- KU11.** how to calculate the stocking density for the selected fish species and maintain it while stocking the fish seed in the biofloc tank
- KU12.** how to sanitise the fish seed before stocking in the biofloc tank
- KU13.** nutrition management of the fish in the biofloc tank including the use of dietary supplements
- KU14.** recommended practices to maintain the feed conversion ratio
- KU15.** necessary preventive measures to control disease and insects in the biofloc tank
- KU16.** the importance of carrying out regular sampling of the fish in the tank to ensure its healthy growth and identify signs of disease and stress
- KU17.** the process of quarantining and treating the diseased fish
- KU18.** maturity indicators of the fish stocked in the biofloc tank
- KU19.** partial or complete harvesting of the fish and the recommended method of harvesting
- KU20.** the process of icing and storing the fish after being harvested and the required temperature and Relative Humidity (RH)
- KU21.** appropriate packing material and process of packing the harvested fish
- KU22.** the appropriate mode of transport to ensure minimum stress and damage to the fish during transit
- KU23.** the importance of minimising manual handling of the fish
- KU24.** applicable documentation requirements in the job role

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** maintain work-related records
- GS2.** communicate clearly and politely with co-workers and clients
- GS3.** read the relevant literature to get information about the latest developments in the field of work
- GS4.** plan and prioritise tasks to ensure timely completion
- GS5.** take quick decisions to deal with workplace emergencies/ accidents
- GS6.** listen attentively to understand the information/ instructions being shared by the speaker
- GS7.** identify possible disruptions to work and take appropriate preventive measures
- GS8.** co-ordinate with co-workers to achieve work objectives
- GS9.** evaluate all possible solutions to a problem to select the best one

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Arrange the required resources</i>	6	6	-	4
PC1. identify various materials required for constructing a biofloc tank such as PVC tarpaulin, binding wires, PVC pipes, elbows, ball valves, pipe end cap, etc.	-	-	-	-
PC2. select a vendor for purchasing the material based on the quality and price of the material	-	-	-	-
PC3. purchase the material as per the requirement and store them safely	-	-	-	-
<i>Set up the biofloc tank</i>	6	8	-	4
PC4. select a site with the required temperature and sunlight exposure for the construction of biofloc tank	-	-	-	-
PC5. prepare the design of biofloc tank in an appropriate shape as per the quantity of fish to be cultured	-	-	-	-
PC6. set up the biofloc tank using the recommended material and as per the prepared design	-	-	-	-
PC7. set up water outlets for removing the sludge and other solid waste from the biofloc tank	-	-	-	-
PC8. install the aerator pumps, air cylinder, air diffusers, air pipes, air controllers and ball valves	-	-	-	-
<i>Prepare for stocking the seeds</i>	8	6	-	4
PC9. treat the water with chlorine or an appropriate disinfectant before filling in the biofloc tank	-	-	-	-
PC10. fill in the biofloc tank with treated water to the recommended level	-	-	-	-
PC11. apply the necessary treatment in the water such as raw salt to adjust the TDS and pH levels	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. apply the recommended probiotics and immuno-stimulants in the recommended quantity	-	-	-	-
<i>Stock the seeds</i>	2	4	-	4
PC13. select the fish species suitable for biofloc aquaculture	-	-	-	-
PC14. calculate the optimum stocking density for the selected fish species	-	-	-	-
PC15. procure healthy seed stock of the selected fish species	-	-	-	-
PC16. sanitise the fish seed stock before stocking in the biofloc tank	-	-	-	-
PC17. stock the fish seed in the biofloc tank maintaining the required stocking density	-	-	-	-
<i>Perform nutrition management</i>	2	4	-	2
PC18. identify the feed requirement of the stocked fish and feed them maintaining the required level of nutrients	-	-	-	-
PC19. follow the recommended practices to maintain the feed conversion ratio	-	-	-	-
PC20. add dietary supplements in the feed as per the requirement	-	-	-	-
<i>Perform disease management</i>	2	4	-	6
PC21. implement the necessary preventive measures as per the biofloc technology to control disease and insects in the biofloc tank	-	-	-	-
PC22. carry out regular sampling of the fish in the tank to ensure its optimum growth and identify signs of disease and stress	-	-	-	-
PC23. quarantine the diseased fish in a separate tank	-	-	-	-
PC24. apply the recommended treatment to treat the diseased fish	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out harvesting and post-harvest management</i>	4	8	-	6
PC25. check the maturity indicators of the fish stocked in the tank	-	-	-	-
PC26. harvest the fish partially or completely using the recommended method	-	-	-	-
PC27. perform icing of the fish after being harvested	-	-	-	-
PC28. store the harvested fish under the recommended temperature and Relative Humidity (RH)	-	-	-	-
PC29. pack the harvested fish in appropriate container ensuring hygiene	-	-	-	-
PC30. arrange an appropriate mode of transport to transport the fish to the target market, ensuring minimum stress and damage to the fish during transit	-	-	-	-
PC31. implement the relevant measures to minimise the extent of manual handling of the fish	-	-	-	-
PC32. maintain the record of the fish raised and harvested using the biofloc technology	-	-	-	-
NOS Total	30	40	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4959
NOS Name	Culture fish using the biofloc technology
Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
NSQF Level	5
Credits	2
Version	1.0
Next Review Date	30/12/2024

Qualification Pack

AGR/N4960: Set up and use the Recirculating Aquaculture System

Description

This OS unit is about setting up a Recirculating Aquaculture System (RAS) to filter and reuse water in fish rearing.

Scope

The scope covers the following :

- Arrange the required resources
- Set up the RAS
- Stock seeds in the culture tank
- Use and maintain the RAS

Elements and Performance Criteria

Arrange the required resources

To be competent, the user/individual on the job must be able to:

- PC1.** identify various resources required for setting up the RAS such as tank construction material, mechanical filter, bio-filter, water pump, oxygenator, aerator, etc.
- PC2.** select a vendor based on the quality and price of the material
- PC3.** purchase the material as per the requirement and store them safely
- PC4.** ensure adequate availability of quality water and uninterrupted supply of electricity to operate various RAS equipment
- PC5.** arrange for power back-up/ electricity generator to deal with power cuts
- PC6.** maintain the record of purchase and payment

Set up the RAS

To be competent, the user/individual on the job must be able to:

- PC7.** set up a circular/ rectangular/ oval fish culture tank of the required capacity according to the available space, quantity of fish to be cultured and their water requirement
- PC8.** use durable material such as concrete, plastic or metal to construct the tank
- PC9.** ensure the tank has an outlet with the mesh screen of appropriate mesh size
- PC10.** install the mechanical filter at the fish culture tank to remove the solids such as faeces, sediment, uneaten feed from the water discharged from the tank
- PC11.** set up the bio-filter to remove ammonia from water and convert it into nitrogen
- PC12.** install the oxygenation and aeration devices to re-oxygenate and aerate the water
- PC13.** set up the water pump to pump oxygenated and aerated water into the culture tank

Stock seeds in the culture tank

To be competent, the user/individual on the job must be able to:

- PC14.** fill in the culture pond with treated water to the recommended level
- PC15.** stock appropriate species of fish suitable for RAS such as barramundi, carp fish, perch, catfish, white fish, tilapia, etc.

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PC16. maintain the recommended stocking density in the culture tank

PC17. apply lime and other recommended treatment such as probiotics and immuno-stimulants in the recommended quantity in the tank

Use and maintain the RAS

To be competent, the user/individual on the job must be able to:

PC18. supply oxygenated water into the tank in the required quantity

PC19. maintain the recommended pressure while supplying water into the tank

PC20. carry out stripping in the culture tank with the use of aerator to clear the accumulated gases

PC21. sample water in the culture tank regularly to ensure appropriate quality parameters are maintained

PC22. clean the mesh screen installed in the tank regularly

PC23. clean/ flush the mechanical and bio filters regularly to prevent the accumulation of sludge and biological waste

PC24. carry out minor repairs in a RAS and co-ordinate with a technician for complex repair needs

PC25. maintain the record of repair and maintenance

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. various resources required for setting up the RAS such as tank construction material, mechanical filter, bio-filter, water pump, oxygenation and aeration devices, etc.

KU2. the importance of ensuring adequate availability of quality water and power supply to operate various RAS equipment

KU3. the process of constructing a circular/ rectangular/ oval fish culture tank and the appropriate material to construct the tank such as metal, plastic, concrete, etc.

KU4. the process of installing the relevant RAS equipment such as the oxygenator, aerator, water pump, mechanical and bio filters

KU5. fish species suitable for RAS such as barramundi, carp fish, perch, catfish, white fish, tilapia, etc.

KU6. the importance of using treated water in the culture tank and maintaining the recommended stocking density

KU7. the process of applying lime and other recommended treatment such as probiotics and immuno-stimulants in the culture tank

KU8. how to use various RAS equipment correctly

KU9. the process of sampling the water in the culture tank

KU10. the process of carrying out regular repair and maintenance of the RAS equipment

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related records

GS2. communicate clearly and politely

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- GS3.** read the relevant literature to get latest about the field of work
- GS4.** plan and prioritise tasks to ensure timely completion
- GS5.** take quick decisions to deal with workplace emergencies/ accidents
- GS6.** listen attentively to understand the information/ instructions being shared
- GS7.** identify possible disruptions to work and take appropriate preventive measures
- GS8.** co-ordinate with the co-workers to achieve the work objectives
- GS9.** evaluate all possible solutions to a problem to select the best one

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Arrange the required resources</i>	8	10	-	10
PC1. identify various resources required for setting up the RAS such as tank construction material, mechanical filter, bio-filter, water pump, oxygenator, aerator, etc.	-	-	-	-
PC2. select a vendor based on the quality and price of the material	-	-	-	-
PC3. purchase the material as per the requirement and store them safely	-	-	-	-
PC4. ensure adequate availability of quality water and uninterrupted supply of electricity to operate various RAS equipment	-	-	-	-
PC5. arrange for power back-up/ electricity generator to deal with power cuts	-	-	-	-
PC6. maintain the record of purchase and payment	-	-	-	-
<i>Set up the RAS</i>	6	10	-	6
PC7. set up a circular/ rectangular/ oval fish culture tank of the required capacity according to the available space, quantity of fish to be cultured and their water requirement	-	-	-	-
PC8. use durable material such as concrete, plastic or metal to construct the tank	-	-	-	-
PC9. ensure the tank has an outlet with the mesh screen of appropriate mesh size	-	-	-	-
PC10. install the mechanical filter at the fish culture tank to remove the solids such as faeces, sediment, uneaten feed from the water discharged from the tank	-	-	-	-
PC11. set up the bio-filter to remove ammonia from water and convert it into nitrogen	-	-	-	-
PC12. install the oxygenation and aeration devices to re-oxygenate and aerate the water	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. set up the water pump to pump oxygenated and aerated water into the culture tank	-	-	-	-
<i>Stock seeds in the culture tank</i>	8	10	-	8
PC14. fill in the culture pond with treated water to the recommended level	-	-	-	-
PC15. stock appropriate species of fish suitable for RAS such as barramundi, carp fish, perch, catfish, white fish, tilapia, etc.	-	-	-	-
PC16. maintain the recommended stocking density in the culture tank	-	-	-	-
PC17. apply lime and other recommended treatment such as probiotics and immuno-stimulants in the recommended quantity in the tank	-	-	-	-
<i>Use and maintain the RAS</i>	8	10	-	6
PC18. supply oxygenated water into the tank in the required quantity	-	-	-	-
PC19. maintain the recommended pressure while supplying water into the tank	-	-	-	-
PC20. carry out stripping in the culture tank with the use of aerator to clear the accumulated gases	-	-	-	-
PC21. sample water in the culture tank regularly to ensure appropriate quality parameters are maintained	-	-	-	-
PC22. clean the mesh screen installed in the tank regularly	-	-	-	-
PC23. clean/ flush the mechanical and bio filters regularly to prevent the accumulation of sludge and biological waste	-	-	-	-
PC24. carry out minor repairs in a RAS and co-ordinate with a technician for complex repair needs	-	-	-	-
PC25. maintain the record of repair and maintenance	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	30	40	-	30

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4960
NOS Name	Set up and use the Recirculating Aquaculture System
Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture
NSQF Level	5
Credits	2
Version	1.0
Next Review Date	30/12/2024

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.

The assessment for the theory part will be based on the knowledge bank of questions created by the SSC. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per the assessment criteria below).

Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

In case of successfully passing only a certain number of NOSs, the trainee is eligible to take a subsequent assessment on the balance NOS's to pass the Qualification Pack.

In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

Qualification Pack

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4916.Undertake the pond preparation activities	30	40	-	30	100	30
AGR/N4917.Carry out aquaculture operations	30	40	-	30	100	40
AGR/N4918.Ensure health, hygiene and safety during culture operations	30	40	-	30	100	25
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	5
Total	110	150	-	90	350	100

Optional: 1 Biofloc Technology

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4959.Culture fish using the biofloc technology	30	40	-	30	100	20
Total	30	40	-	30	100	20

Optional: 2 RAS Technology

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4960.Set up and use the Recirculating Aquaculture System	30	40	-	30	100	20
Total	30	40	-	30	100	20

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Qualification Pack

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.