



Model Curriculum

QP Name: Basics of Cage Culture Fish Farming

QP Code: AGR/N4968

Version: 1.0

NSQF Level: 4.0

Model Curriculum Version: 1.0

Agriculture Skill Council of India || 6th Floor, GNG Tower, Plot No. 10, Sector -44, Gurgaon Haryana-122004 || email:standards@asci-india.com

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Training Parameters

Sector	Agriculture
Sub-Sector	Fisheries
Occupation	Aquaculture, Aquaculture Workers
Country	India
NSQF Level	4.0
Aligned to NCO/ISCO/ISIC Code	NCO-2015/6221. 9900
Minimum Educational Qualification and Experience	12th grade pass or equivalent OR 10th Grade Pass with 3-year relevant experience in the Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level 3.5 with 1.5-year relevant experience in Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level 3.0 with 1.5-year relevant experience in Agriculture and allied sectors
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18
Last Reviewed On	27-08-2024
Next Review Date	27-08-2027
NSQC Approval Date	27-08-2024
NOS Version	1.0
Model Curriculum Creation Date	27-08-2024
Model Curriculum Valid Up to Date	27-08-2027
Model Curriculum Version	1.0
Minimum Duration of the Course	45 Hours
Maximum Duration of the Course	45 Hours

Program Overview

This section summarises the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Explain the process of preparing and installing the cage for fish.
- Elucidate the process of selecting and maintaining fish species in cage culture.
- Discuss the process of maintaining the cage during fish culture in cages.
- Describe the process of harvesting and marketing the fish.
- Discuss health, hygiene, and safety considerations during culture operations.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N4968: Basics of Cage Culture Fish Farmer NOS Version- 1.0 NSQF Level- 4.0	15:00	30:00	00:00	00:00	45:00
Module 1: Introduction to the role of a Cage Culture Fish Farmer	01:00	00:00	00:00	00:00	01:00
Module 2: Preparing and installing the fish cage	02:00	04:00	00:00	00:00	06:00
Module 3: Stocking, Feeding, and Maintaining the Fish	06:00	12:00	00:00	00:00	18:00
Module 4: Cage Maintenance during Fish Culture	02:00	06:00	00:00	00:00	08:00
Module 5: Harvesting and marketing the fish	03:00	07:00	00:00	00:00	10:00
Module 6: Health, hygiene, and safety during culture operations	01:00	01:00	00:00	00:00	02:00
Total Duration	15:00	30:00	00:00	00:00	45:00

Module Details

Module 1: Introduction to the role of a Cage Culture Fish Farmer Mapped to AGR/N4968, v1.0

Terminal Outcomes:

- Discuss the job role of a Cage Culture Fish Farmer.

Duration: 01:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Describe the size and scope of the agriculture industry and its sub-sectors. ● Discuss the role and responsibilities of a Cage Culture Fish Farmer. ● Identify various employment opportunities for a Cage Culture Fish Farmer. 	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Preparing and Installing the Fish Cage

Mapped to AGR/N4968, v1.0

Terminal Outcomes:

- Explain the process of preparing and installing a cage for fish farming.

Duration: 02:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain the criteria for selecting a suitable location for cage culture. ● Elucidate the criteria for selecting the appropriate cage culture site, cage type and durable, non-toxic, and rust-proof cage fabrication materials, and how to procure them from authorized vendors. ● Discuss the coordination process with cage fabricators to ensure fabrication of cage frames in the desired size and shape. 	<ul style="list-style-type: none"> ● Demonstrate how to apply epoxy primer and paint on Galvanized Iron (GI)/Mild Steel (MS) cages to prevent rusting. ● Show how to install high-quality, UV-resistant netting of appropriate mesh size and floats around the cage frame. ● Demonstrate the process of securely anchoring the cage to the bottom of the water body. ● Show how to install shade structures, if required, to protect fish from excessive sunlight exposure.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Video Recording Equipment, Voyage Plan, Ship Whistle, Ship Flags, PVC pipes, PVC drums to be used as floats, Cage frames for submerged, submersible, fixed and floating cages made of HDPE, GI pipes, LDPE, and steel, Mooring blocks weighing 40-50 kgs to be used as anchors, Anchor ropes, Flag pole, etc.	

Module 3: Stocking, Feeding, and Maintaining the Fish

Mapped to AGR/ N4968, v1.0

Terminal Outcomes:

- Discuss the procedures and considerations involved in stocking, feeding, and maintaining fish in cage culture systems.

Duration: 06:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the process of preparing and storing fish feed hygienically. • Elucidate the feeding schedule for fish and how it corresponds to different stages of their growth. • Discuss the appropriate measures for protecting a cage culture site from pollution and maintaining optimal water quality. • Describe the symptoms of different fish diseases and the appropriate treatment to be adopted. • Describe the measures to prevent the introduction of stress and disease among fish in aquaculture. • Determine the role and importance of coordinating with an aquatic veterinarian or aquaculture expert for regular fish health assessment. • Discuss the adherence to regulations related to fish health, biosecurity, and disease control in aquaculture practices. 	<ul style="list-style-type: none"> • Demonstrate how to select and procure seeds of commercially important fish species for cage culture. • Show how to stock fingerlings/advanced fingerlings in the cage while maintaining optimum stock density. • Demonstrate how to prepare and implement a feeding plan based on the nutritional needs of the selected fish species. • Show how to establish and utilize a quarantine facility for isolating and treating affected individual fish or groups. • Demonstrate how to regularly examine cultured fish to detect symptoms of parasites, pathogenic infections, phenotypic disorders, etc. • Show how to follow the appropriate treatment plan for identified fish diseases.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Video Recording Equipment, Voyage Plan, Ship Whistle, Ship Flags, Net-cages, Pelletiser, Feeding trays / boxes, Oxygen cylinders, Mechanical filters (Leaf filters), Hand nets, Epoxy paint, Feeding trays / boxes, Egg Candler, etc.	

Module 4: Cage Maintenance during Fish Culture

Mapped to AGR/ N4968, v1.0

Terminal Outcomes:

- Explain the various cage maintenance activities carried out during fish culture.

Duration: 02:00	Duration: 06:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain the process for inspecting and maintaining cages in aquaculture operations. ● Elucidate the significance of checking buoyancy elements regularly to ensure a cage remains afloat. ● Discuss the importance of inspecting anchors and anchor lines in maintaining stability and preventing cage movement. 	<ul style="list-style-type: none"> ● Demonstrate how to inspect and clean the netting, mooring, and cage structure? ● Show how to repair or replace damaged netting to prevent fish escape and predator intrusion. ● Demonstrate how to inspect anchors and anchor lines to ensure stability and prevent cage movement.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Video Recording Equipment, Voyage Plan, Ship Whistle, Ship Flags, Iron chains, Maneuverings booklet, Light buoys, Black ball shape, Hand tool kit, etc.	

Module 5: Harvesting and Marketing the Fish

Mapped to AGR/ N4968, v1.0

Terminal Outcomes:

- Explain the process of harvesting fish and marketing the fish in cage culture.

Duration: 03:00	Duration: 07:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain the process of harvesting fish and the use of appropriate tools and equipment. ● Elucidate the process for discarding dead and damaged fish in an environment-friendly manner. ● Discuss the regulations applicable to the labelling and packaging of the fish in cage culture. ● Determine the regulations concerning the marketing and transportation of fish in cage culture. 	<ul style="list-style-type: none"> ● Demonstrate how to determine the appropriate time for harvesting fish based on their growth stage and market demand. ● Show how to select and utilize the proper harvesting tools for efficiently gathering fish. ● Demonstrate the post-harvest activities such as gutting, cleaning, chilling, sorting, and grading of harvested fish. ● Show how to store harvested fish in suitable conditions to prevent deterioration in quality. ● Show how to maintain the records concerning the marketing of fish.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Video Recording Equipment, Voyage Plan, Ship Whistle, Ship Flags, Dip net, Cast nets, Daylight signalling lamp,	

Module 6: Health, Hygiene, and Safety during Culture Operations

Mapped to, AGR/ N4968, v1.0

Terminal Outcomes:

- Explain the importance of maintaining health, hygiene, and safety in culture operations.

Duration: 01:00	Duration: 01:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Describe the necessary practices to protect aquaculture farms and dykes from erosion and natural calamities. ● Discuss the standard procedures for dealing with accidents and emergencies in aquaculture operations. 	<ul style="list-style-type: none"> ● Demonstrate how to protect cultured organisms from diseases, contamination, and common predators/preying organisms? ● Show how to use relevant tools, equipment, and Personal Protective Equipment (PPE) appropriately in this context?
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
Gumboots, Rubber gloves, Masks, Dip net, PVC pipes, PVC drums to be used as floats, Mechanical filters (Leaf filters), Maneuverings booklet, Light buoys, Hand tool kit, Black ball shape, Anchor ropes	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialisation	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
12th Class		3	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0		
Diploma	Fisheries	2	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0		
Graduate	B.Sc. (Fisheries)	1	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0		
Graduate	B.Sc. (Zoology)	1	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0		

Trainer Certification	
Domain Certification	Platform Certification

Certified for Job Role “Basics of Cage Culture Fish Farming”, mapped to NOS: “AGR/N4968, v1.0”, Minimum accepted score is 80%

Recommended that the Trainer is certified for the Job Role: “Trainer (Vet and Skills)”, mapped to the Qualification Pack: “MEP/Q2601, v2.0”. The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	B.F.Sc	4	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0	-	
Graduate	Fisheries	5	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0	-	
Post Graduate	M.F.Sc	2	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0	-	
Post Graduate	Fisheries / Applied Aquaculture / Marine Biology and related streams	2	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields	0	-	
PhD		1	Fisheries Science/ Aquaculture/ Applied aquaculture/ Marine fisheries or related streams and fields			

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role “Basics of Cage Culture Fish Farming”, mapped to NOS: “AGR/N4968”, Minimum accepted score is 80%	Certified for the Job Role: “Assessor (Vet and Skills)”, mapped to the Qualification Pack: “MEP/Q2701, v2.0”, with a minimum score of 80%.

Assessment Strategy

Assessment System Overview

In Agriculture Sector, it is of ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake the task. Based on the Assessment Criteria, SSC in association with empaneled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

1. Multiple Choice Questions: To assess basic knowledge (Objective/Subjective)
2. Viva: To assess awareness on processes (Oral and/or written questioning)
3. Practical: To evaluate skills and identify competencies. (Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real-time' internet-based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on the ground through qualified and ToA certified assessors.

An individual must have adequate knowledge and skills to perform a specific task, weightage for different aspects of the assessment is given as follows:

- Multiple Choice Questions: 20%-30%, depending on the specific QP
- Viva: 20%
- Practical: 50% - 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)
- Assessment will be carried out by certified assessors through empaneled assessment partners. Based on the results of the assessment; ASCI will certify the learners/candidates

Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at the assessment location.

- In remote locations/villages, assessments get delivered through tablets without the requirement of the Internet.
- Multilingual assessments (ASCI is conducting the assessments in 13 + languages pan India)
- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback are stored digitally on the cloud
- Advanced auto-proctoring features – photographs, time-stamp, geographic-tagging, toggle-screen/copy-paste disabled, etc.
- Android-based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention
- Assessment will normally be fixed for a day after the end date of the training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- The room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practice will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple-choice questions, pictorial questions, etc. which will test the trainee on his theoretical knowledge of the subject.

- The theory, practical and viva assessments will be carried out on the same day. In case of a greater number of candidates, the number of assessors and venue facilitation be increased and facilitated

Assessment			
Assessment Type	Formative or Summative	Strategies	Examples
Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on the usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling the job situation

The question paper is pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.

Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioural traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by a theoretical understanding of the testing objectives and published research about the item types and constructs that have shown statistical validity towards measuring the construct. Test item types that have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of the testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation-based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against a set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, dos and don'ts, subjective questions to check the understanding of practical tasks.

The assessor has to go through an orientation program organized by the Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. The assessor shall be given a NOS and PC level overview of each QP as applicable. The overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework that will maintain the standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidence collected by AAs and ASCI are:

- GeoTagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidence (photos and videos) to the assessor one day before the assessment. The list is mentioned below:
 - Signed Attendance sheet
 - Assessor feedback sheet
 - Candidate feedback sheet
 - Assessment checklist for assessor
 - Candidate Aadhar/ID card verification
 - Pictures of the classroom, labs to check the availability of adequate equipment's and tools to conduct the training and assessment
 - Pictures and videos of Assessment, training feedback and infrastructure.
- Apart from the Assessor, a Technical assistant is popularly known as Proctor also ensures the proper documentation and they verify each other's tasks.
- To validate their work on the day of the assessment, regular calls and video calls are done.
- On-boarding and training of the assessor and proctor are done on a timely basis to ensure that the quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

Methods of Validation

- Morning Check (Pre-Assessment): Backend team of AA calls and confirms assessor/technical SPOC event status. Assessor/Technical SPOC are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- Video Calls: Random video calls are made to the technical SPOC/assessor so as to keep a check on assessment quality and ensure assessment is carried out in a fair and transparent manner
- Aadhar verification of candidates
- Evening Check (Post Assessment): Calls are made to the ground team to ensure the event is over by what time and the documentation is done properly or not.
- TP Calling: To keep a check on malpractices, an independent audit team calls the TP on a recorded line to take confirmation if there was any malpractice activity observed in the

assessment on part of the AA/SSC team. If calls are not connected, an email is sent to TP SPOC for taking their confirmation

- **Video and Picture Evidence:** Backend team collects video and pictures for assessment on a real-time basis and highlights any issue such as students sitting idle/ trainer helping the candidates during the assessment.
- **Surprise Visit:** Time to time SSC/AA Audit team can visit the assessment location and conduct a surprise audit for the assessment carried out by the ground team.
- **Geo Tagging:** On the day of the assessment, each technical SPOC is required to login into our internal app which is Geotagged. Any deviation with the centre address needs to be highlighted to the assessment team on a real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI have a fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks form the basis of the results and encrypted files generated to avoid data manipulation. All responses were captured and stored in the System with Time-Stamped at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.
- Maker Checker concept: One person prepares the results and another audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All softcopies of documents are received from the on-ground tech team over email. The same is downloaded by our internal backend team and saved in Repository. The repository consists of scheme-wise folders. These scheme-wise folders have two job role-specific folders. These specific folders have Year wise and Month wise folders where all documents are saved in Batch specific folders. All Hard copies are filed and stored in the storeroom.

Result Review & Recheck Mechanism –

- Time-stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidates shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
AGR	Agriculture
IPM	Integrated Pest Management
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
PwD	People with Disability
PPE	Personal Protective Equipment
QP	Qualifications Pack
HDPE	High-Density Polyethylene
GI	Galvanized Iron
MS	Mild Steel