

Model Curriculum

Hatchery Manager

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: FISHERIES
OCCUPATION: AQUACULTURE
REF ID: AGR/Q4912, V1.0
NSQF LEVEL: 6



  

Certificate

**CURRICULUM COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL
STANDARDS**

is hereby issued by the

AGRICULTURE SKILL COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: **'Hatchery Manager'** QP No. **'AGR/Q 4932 NSQF Level 6'**

Date of Issuance: February 15th, 2017
Valid up to: March 31st, 2019
* Valid up to the next review date of the Qualification Pack


Authorized Signatory
(Agriculture Skill Council of India)

TABLE OF CONTENTS

<u>1. Curriculum</u>	04
<u>2. Trainer Prerequisites</u>	08
<u>3. Annexure: Assessment Criteria</u>	09

Hatchery Manager

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Hatchery Manager”, in the “Agriculture & Allied” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Aquaculture Technician		
Qualification Pack Name & Reference ID.	AGR/Q4912 v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	Bachelor's degree in Fisheries Science/ Marine Biology		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Perform breeding and seed production upon hatchery preparation: Able to prepare hatchery (based on hatchery type), selection of ideal species basis freshwater, brackishwater or marine fish species and technology for culture operation, understanding potential disease outbreak risk factors, ensuring biosecurity measures, documentation of SOS related to different types of water bodies (freshwater, brackishwater or marinewater), calculation of batch size produced, water exchange using different mesh sized nets, adequate dechlorination, aeration, disinfection and proper cleaning etc. • Effectively manage hatchery activities: ensure stocking of healthy larvae/seed, live feed preparation and formulation, water management in tanks, seed packaging and transportation, use of probiotics to minimise bacterial and fungal infections, carry out culture as well as preservation of live feed organisms, calculation of average body weight of larvae, preparation of feed charts, quarantine protocols, proper spawning process, water circulation, seed acclimatization to required salinity , transportation in refrigerated trucks etc. • Expert in management of seed stocking and transportation : Determining adequate manpower, allocation of manpower for unforeseen circumstances, facilitate communication, provision of proper training to feed boys etc • Management of hatchery budgets and report preparation: data compilation and comprehensive report preparation, developing hatchery budget, keeping track record of previous years reports • Regulate safety, hygiene and sanitation practices : prevention of species escape, maintaining hygiene and health of seedlings at various level of growth, identifying common preys and predators, restricted entry, protective clothing and gear, fencing arrangement, regular inspection of pathogenic infections, and disease outbreaks 		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of "Hatchery Manager" Qualification Pack issued by "Agriculture Skill Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> Understand General Discipline in the class room (Do's & Don'ts) Study the Scope & importance of hatchery and seed production in India Understand the Role of an hatchery manager and the progression pathways Identify the broodstock and manage the broodstock for breeding Identify or atleast should have some idea of different types of cultured fishes of freshwater, brackishwater and marine water. 	Laptop, white board, marker, projector
2	Ensure production of broodstock Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code AGR / N4941	<ul style="list-style-type: none"> Identify brood stock depending on culture species (Freshwater, brackishwater or marine fish). Understand fish habitat of species to be culture either freshwater, brackishwater or marine fish. Perform pond preparation activity Perform brood stock packaging and transportation Understand brood stock nutritional requirements Carry out soil, water and fish sampling Carry out proper liming, manuring and fertilization of pond. 	Oxygen cylinder, Packaging material – Plastic bags, Anaesthesia, Bucket, torch etc
3	Ensure preparation of hatchery for operations Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR / N4942	<ul style="list-style-type: none"> Design, modify and construct hatcheries Understand and carry out effective precautionary measures to minimise potential risk of contamination Carryout documentation Perform stocking Set up effective coordination between hatchery staff Carryout breeding Carryout transportation of broodstock Carryout all biosecurity measures for broodstock tank Insure timely circulation of water in the tanks 	Breeding hapa, anaesthesia, water pump, injection, torch, bucket,
4	Prepare reports and manage hatchery budgets Theory Duration (hh:mm)	<ul style="list-style-type: none"> Keep records of hatchery operations Prepare hatchery budget Coordinate with colleagues. 	Laptop, Note book, Pen, Marker

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	15:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR / N4943		
5	Ensure personnel management Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR / N4932	<ul style="list-style-type: none"> Determine manpower required for different hatchery operations Set KRAs of all employees and also to ensure proper functioning of all colleagues Effective monitoring the hatchery operations Train the workers 	Laptop, white board, marker, projector, Audio-visual aids,
6	Ensure safety, hygiene and sanitation practices for culture operations Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR/N4918	<ul style="list-style-type: none"> Prevent species escape, Maintain hygiene and health of seedlings at various level of growth, Identify common preys and predators, Understand restricted entry, Wear protective clothing and gear, Perform fencing arrangement, Carryout regular inspection of pathogenic infections, and disease outbreaks 	Grinder, mixer, pelletizer, soil and water testing kit, pH meter, nets, aerator, Water Pump, hypochlorite solution, surgical knife, Gum boots, Breeding hapa, Syringe, gloves, Power backup
	Total Duration: Theory Duration (hh:mm) 80:00 Practical Duration (hh:mm) 120:00	Unique Equipment Required: Laptop, white board, marker, projector, Audio-visual aids, Water pump, Air or Oxygen diffusers, Aerators, Mechanical filters - like leaf filters, Tubes, Power backup, Grinder, Mixer, Pelletiser, Profi-Feeders, weed eradication equipments, Dip net or any other harvesting gear, safety shoes, goggles, first aid box, Ovaprime, Surgical knife, Soil and water testing kit, Breeding hapa, Bucket, Torch, Gloves, seechi disc, refractometer, pH meter, Anaesthesia.	

Grand Total Course Duration: **200 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by Agriculture Skill Council of India)

Trainer Prerequisites for Job role: "Hatchery Manager" mapped to Qualification Pack: "AGR/Q4912, v1.0"

Sr. No.	Area	Details
1	Description	Trainer is responsible for educating the trainees – Breeding and seed production of aquatic organisms. This includes responsibilities such as production of broodstock, preparation of hatchery for operations, preparing reports and managing hatchery budget, etc.
2	Personal Attributes	Trainer should be Subject Matter Expert. He/ she should have good communication, leadership, observation and practical oriented skills.
3	Minimum Educational Qualifications	Graduate, preferably in Fisheries
4a	Domain Certification	Certified for Job Role: " <u>Hatchery Manager</u> " mapped to QP: " <u>AGR/Q4912, v1.0</u> ". Minimum accepted score is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted % as per respective SSC guidelines is 80%.
5	Experience	<ul style="list-style-type: none"> • M. F. Sc • B. F. Sc • B. Sc Agriculture/Zoology with 2 years of relevant work experience • Any graduate with 3 years of relevant work experience

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Hatchery Manager
Qualification Pack	AGR/Q4912, v1.0
Sector Skill Council	Agriculture

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre(as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in aggregate
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessment outcomes	Assessment criteria	Marks Allocation			
		Total Marks	Out Of	Theory	Skills Practical
1.AGR/N4941 Ensure production of broodstock	PC1. identify good sources of adult fish to raise them to broodstock	100	11	3	8
	PC2. ensure preparation of broodstock pond		11	3	8
	PC3. ensure proper transportation of broodstock and stocking at appropriate density and species ratio		11	3	8
	PC4. determine suitable water level required in broodstock ponds for different varieties or organisms		11	4	7
	PC5. perform periodic soil, water and fish sampling		11	3	8
	PC6. ensure application of appropriate dosages of lime, manures and fertilizers to maintain suitable soil and water quality in the culture system		12	4	8
	PC7. carry out periodic but limited sampling of organisms to check maturity level		11	3	8
	PC8. carry out selection of ripened brooder (male and female) for taking into hatchery for induced breeding activity		11	3	8
	PC9. ensure stress is minimized during transportation to hatchery		11	4	7
	Total		100	30	70
2.AGR/N4942 Ensure preparation of hatchery for operations	PC1. design, modify and construct hatcheries with separate facilities and supporting infrastructure required for breeding of the selected species	100	8	2	6
	PC2. consider the potential risks of contamination and ensure effective precautionary measures		8	3	5
	PC3. ensure the documents indicating that the standard operating procedures are read and understood, for all kinds of activities during the artificial seed production		8	3	5
	PC4. calculate the batch size to be produced		8	3	5
	PC5. organize and direct hatchery staff to meet the set batch size		7	2	5
	PC6. select a suitable technology for breeding the species		8	3	5
	PC7. identify fully matured brooder (male and female) and arrange their transport to hatchery with minimum stress		8	3	5
	PC8. ensure proper cleanliness of the spawning pool prior to release of the brooders and incubation chamber		8	2	6

	before incubating eggs				
	PC9. select appropriate inducing agent, right dosages for male and female brooder		8	2	6
	PC10. identify right method of injection		7	2	5
	PC11. ensure timing and quantity of water circulation in the tanks		7	2	5
	PC12. ensure that the hatchery tanks and equipment are clean and disinfected after the breeding operation		8	2	6
	PC13. ensure hatchery is ready for use for the next cycle		7	2	5
	Total		100	30	70
3.AGR/N4943 Prepare reports and manage hatchery budget	PC1. compile data to write comprehensive reports detailing hatchery operations from the initial stage up to the final stage of breeding	100	17	5	12
	PC2. compile data for the preparation of progress reports, work reports, time sheets and financial reports		17	5	12
	PC3. compile reports on cost for the functioning of the various segments of the hatchery and the utilisation of funds per segment		17	5	12
	PC4. keep track of previous years reports and make required analysis with the current year		16	5	11
	PC5. prepare the budget for the hatchery for the current year taking into account; the cost report analysis of the previous year, and the revised segment fund utilisation and expansion requirements		17	5	12
	PC6. ensure the budget is vetted and approved by the senior management		16	5	11
	Total		100	30	70
4.AGR/N4932 Ensure personnel management	PC1. determine manpower demand required for, transportation, stocking, survival and growth monitoring, pond netting for broodstock selection, handling and induced breeding	100	15	5	10
	PC2. define roles and responsibilities of all personnel		14	4	10
	PC3. prepare a backup plan for manpower allocation in case of unforeseen circumstances		14	4	10
	PC4. coordinate work hours including scheduling, approving time off requests, tracking absences, timekeeping		14	4	10
	PC5. provide training to workers on important policies and procedures on an ongoing basis		15	5	10
	PC6. ensure that the workers are well trained in their respective lines of		14	4	10

	work				
	PC7. facilitate communications from equipment and other machinery repairs personnel		14	4	10
	Total		100	30	70
5.AGR/N4918: Ensure safety hygiene and sanitation practices for culture operations	PC1. ensure suitable measures for protection of from natural calamities such as flood, protect dyke from erosion or break.	100	5	2	3
	PC2. ensure protection and prevent escape of the cultured organisms		5	2	3
	PC3. identify common predators and preying organisms in water bodies		4	1	3
	PC4. apply suitable methods such as fencing to keep away predators in water bodies to protect fish culture		5	1	4
	PC5. restrict entry of unauthorized persons into the premise		5	1	4
	PC6. be fully aware of the dosage, toxicity level and method of application of chemicals / medicines used for fish culture		5	1	4
	PC7. ensure all chemicals are adequately labelled and stored safely		4	1	3
	PC8. identify a quarantine area and implement protocols of quarantine		5	1	4
	PC9. be aware of the possibilities of bacterial (water borne, air borne, formite borne)and other contamination from human handling		5	2	3
	PC10. apply effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing		5	2	3
	PC11. ensure that the fish culture premises are constantly monitored/inspected for breaches in the protection provided by health and hygiene measures		5	2	3
	PC12. undertake basic safety checks before operation of any equipments		4	1	3
	PC13. wear protective clothing and gear as and when required and ensure adherence to safety guidelines		5	1	4
	PC14. report potential hazards to the supervisor immediately		4	1	3
	PC15. follow standard procedures to deal with accidents and emergency situations		5	2	3
	PC16. use first aid kit as and when required and provide appropriate treatment in case of any injuries		5	1	4
	PC17. ensure maintenance of suitable soil and water quality parameters at all times with frequent tests		5	2	3
	PC18. ensure specified feed is provided to organisms at regular intervals and excess		5	2	3

	feeding is avoided				
	PC19. carry out regular inspection of organisms for possible presence of parasites, pathogenic infections, any phenotypic disorder, spot, etc. which are usually the signs of ailments or disease outbreak		5	2	3
	PC20. ensure all nets, utensils and vessels used are decontaminated and clean		4	1	3
	PC21. implement effective security measures for prevention of theft/sabotage		5	1	4
			100	30	70
	TOTAL		500	150	350
	Percentage Weightage:			30%	70%
	Minimum Pass% to qualify (aggregate):			70%	