

Model Curriculum

Freshwater Aquaculture Farmer

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: FISHERIES
OCCUPATION: AQUACULTURE
REF ID: AGR/Q4905, V1.0
NSQF LEVEL: 4



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: '**Freshwater Aquaculture farmer**' QP No. '**AGR/ Q 4905 NSQF Level 4**'

Date of Issuance: February 15th, 2017

Valid up to: March 31st, 2019

* Valid up to the next review date of the Qualification Pack


S. S. Anand
Authorised Signatory
(Agriculture Skill Council of India)

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Freshwater Aquaculture Farmer

CURRICULUM / SYLLABUS

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

Program Name	Freshwater Aquaculture Farmer		
Qualification Pack Name & Reference ID.	AGR/Q4905, v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	Class 8, preferably		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Identify the source and easily adoptable culture techniques of different freshwater species owing to commercial importance depending upon the culture method – either monoculture or polyculture: finfish and/or shellfish • Perform pre- culture activities: facilitation of proper hideouts, bottom fencing, water filtration, pre-stocking pond preparation based on species and culture type (Monoculture or composite culture). • Perform various culture operations: seed collection methods, identifying and monitoring suitable culture techniques (extensive, semi-intensive or intensive), proper monitoring of species behaviour. • Perform post culture activities: removal of predators, water quality parameters, proper feeding regimes, fertilizers, pesticides and medicinal adequate availability and dosage, regular health monitoring of species. • Perform fish harvesting and Marketing: timely harvesting, identifying suitable markets, surveying species demand, reasonable price for sale, timely record keeping and documentation. • Practice health & safety at the work place: Well versed with health, safety and sanitation practices for self and spawns / seedlings / fish. 		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Freshwater Aquaculture Farmer” 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 Freshwater Aquaculture in India Understand the Role of a Freshwater Aquaculture Farmer and the progression pathways Identify different freshwater species that can be cultured 	Laptop, white board, marker, projector
2	Perform pre-culture activities Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR / N4921	<ul style="list-style-type: none"> Perform proper facilitation of hideouts to prevent cannibalism Perform imposing bottom fencing (Basis culture animal), Carry out different water filtration methods Carry out pre-stocking pond preparation Understand seed collection methods Perform proper monitoring of species behaviour based on species to be stocked, Identifying and monitoring suitable culture techniques based on method of culture (extensive, semi-intensive or intensive) and type of culture (Monoculture or Composite fish culture), 	Laptop, white board, marker, projector, Audio-visual aids, Water pump, Air or Oxygen diffusers, Aerators, Mechanical filters - like leaf filters, Tubes, Power backup, PVC pipes,
3	Perform post-stocking culture activities Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR/N4922	<ul style="list-style-type: none"> Carryout removal of predators, Check on water quality parameters Ensure proper feeding regimes based on species stocked and culture method, Understand fertilizers, pesticides and medicinal adequate availability and dosage based on species stocked and culture method Do the regular sampling and health monitoring of species based on species stocked and culture method 	Laptop, white board, marker, projector, Audio-visual aids, Grinder, Mixer, Pelletiser, Profi-Feeders, scareheron, weed eradication equipments, hand nets, feeding trays, seechi disk, ph meter, refractometer, scissors, water testing kit, buckets, hapas, foreceps, weed cutter, dropper, tissue

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			paper, syringes, simple microscope, PCR diagnostic kit, Power backup
4	<p>Perform harvesting and marketing activities for freshwater organisms</p> <p>Theory Duration (hh:mm) 25:00</p> <p>Practical Duration (hh:mm) 25:00</p> <p>Corresponding NOS Code AGR/N4923</p>	<ul style="list-style-type: none"> Undertake timely harvesting, Identifying suitable markets Surveying species demand, Understand reasonable price for sale, 	Laptop, white board, marker, projector, PPEs bags, first aid box, Hand nets and cast nets, dip nets, , Hand gloves, boots, head gear, autoclave, transport vehicles with water storage capacity, oxygen cylinders, ropes, threads, polyoropelene tanks, oxygen tablets, vitamin B 12 tablets for removal of stress during transportation , siphoning pipes, portable DC chargable battery aerators, small ice machine
5	<p>Ensure safety hygiene and sanitation practices for culture operations</p> <p>Theory Duration (hh:mm) 15:00</p> <p>Practical Duration (hh:mm) 30:00</p> <p>Corresponding NOS Code AGR/N4918</p>	<ul style="list-style-type: none"> Perform timely record keeping and documentation Maintain personal hygiene & safety Maintain health & hygiene of seed during transportation and at various stages of growth & maturity Ensure safety measures and upkeep of water bodies used in fish culture 	First aid box, Hand nets and cast nets, Dip nets, , Hand gloves, boots, Head gear, Apron, Fresh towel, Cotton.
	<p>Total Duration:</p> <p>Theory Duration (hh:mm) 95:00</p>	<p>Unique Equipment Required:</p> <p>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 , scareheron, weed eradication equipments, Dip net or any other harvesting gear, safety shoes, goggles, first aid box, hand gloves, head gear, weed cutter, scissors, forceps, syringes, seechi disc,</p>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 105:00	refractometer, simple microscope, PCR diagnostic kit, , chemicals storage bottles, tissue paper, oxygen cylinders, oxygen tablets, vitamin B12 tablets, erythromycin capsules, polypropelene tanks, ropes, threads, autoclave, water testing kit, siphoning pipes, portable DC chargable battery operated aerators, aeration pipes, pH meter	

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: “Freshwater Aquaculture Farmer” mapped to Qualification Pack: “AGR/Q4905, v1.0”

Sr. No.	Area	Details
1	Description	Trainer is responsible for educating the trainees – identifying the organisms for culture in freshwater aquaculture system and their appropriate management practices for the production of organisms which are safe for human consumption.
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	Diploma in Fisheries, Preferably
4a	Domain Certification	Certified for Job Role: “ <u>Freshwater Aquaculture Farmer</u> ” mapped to QP: “ <u>AGR/Q4905, 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 1 year of relevant experience and 3 years of total experience • Any graduate with 4 years of relevant work experience • Diploma in fisheries with 2 years of relevant work experience • 10+2 with 5 years of relevant work experience

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Freshwater Aquaculture Farmer
Qualification Pack	AGR/Q4905, 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 for outcomes	Marks Allocation			
		Total Marks (400)	Out Of	Theor y	Skills Practical
1. AGR/N4921 Perform pre-culture activities	PC1. identify varieties of organisms (carps, catfish, murrels, freshwater prawn, etc.) suitable for culture in specific water bodies	100	9	3	6
	PC2. prepare pond for carp culture using appropriate methods for removal of unwanted organisms filling of water to requisite depth eradication of predatory and weed fishes, introducing preparatory dose of lime, manures and fertilizers		9	3	6
	PC3. prepare ponds for freshwater cat fish culture (i.e. magur – <i>Clarias batrachus</i>) by methods such as fencing to prevent escape of fish from culture ponds		9	2	7
	PC4 prepare ponds for crustacean culture (i.e. prawn) and provide hiding structures at the bottom of the pond		8	2	6
	PC5 find out the source of quality seed for the desired organisms		8	3	5
	PC6. perform seed transport with minimum stress		8	2	6
	PC7. identify the diversified carp species for freshwater aquaculture system		8	3	5
	PC8. ensure seed stocking with due acclimatisation		8	2	6
	PC9. monitor the culture methods for variety of organisms		8	2	6
	PC10. ensure availability of suitable environment for culture of specific organisms		9	3	6
	PC11. identify culture activities of each variety of organisms in culture system		8	3	5
	PC12. perform the culture activities in the desired manner		8	2	6
			100	30	70
2. AGR/N4922: Perform post - stocking culture activities	PC1. identify suitable water level required in culture ponds for different varieties of Organisms	100	4	1	3
	PC2. perform periodic soil, water and fish sampling and netting operation to ensure proper management of the crop		5	2	3
	PC3. apply appropriate dosages of lime, manures, fertilizers and therapeutics to maintain suitable soil and water quality in the culture system		5	2	3
	PC4. identify plankton and benthic fauna in water		4	1	3
	PC5. apply appropriate methods for aeration of water		4	1	3

	PC6. apply suitable methods to control aquatic weeds and algae present in the culture system		4	1	3
	PC7. identify the type of fertilizers, herbicides and chemicals required for culture system and determine their appropriate dose		5	2	3
	PC8. apply the selected inputs with appropriate methods		4	1	3
	PC9. anticipate the type of diseases likely to affect the organisms and take preventive measures		5	2	3
	PC10. apply correct dose of medicines and know the mode of application for curing the organisms		4	1	3
	PC11. sample the cultured organisms at periodic interval to estimate the biomass		5	2	3
	PC12. identify the feed type and amount of daily feed ration		4	1	3
	PC13. deliver the feed with appropriate method and proper schedule		4	1	3
	PC14. determine the quantum of feed and its application for carp culture pond		4	1	3
	PC15. monitor the feed consumption and modify the daily ration accordingly		5	2	3
	PC16. treat the pond area where feed is delivered to maintain the cleanliness, periodically		5	1	4
	PC17. modify the feed ration according to the environmental condition and season		4	1	3
	PC18. determine health parameters to judge the condition of organisms in culture system		4	1	3
	PC19. determine the correct dose of medicines / disinfectants required to cure diseases		4	1	3
	PC20. separate the diseased fish from the healthy fish and put them in a quarantine tank, in case of disease outbreak		5	2	3
	PC21. diagnose the problem/disease with the help of an expert/disease diagnosis laboratory		4	1	3
	PC22. treat as per prescription at recommended dose of the therapeutics		4	1	3
	PC23. monitor the condition of fish in the quarantine tank for signs of improvement		4	1	3
			100	30	70
3.AGR/N4923: Perform harvesting and marketing activities for freshwater organisms	PC1. decide on the harvesting time and ensure timely harvesting of freshwater organisms	100	11	3	8
	PC2. use harvesting net with appropriate mesh size		11	3	8
	PC3. ensure harvest of only the marketable size organisms in case of partial harvesting		11	4	7
	PC4. estimate the approximate quantity to be harvested		11	3	8

	PC5. identify markets where harvested organisms can fetch reasonable price		11	3	8
	PC6. identify demand of organisms in the market to overcome situation compelling distress sale of organisms		12	4	8
	PC7. pack and transport harvested organisms in good condition		11	3	8
	PC8. maintain a record of harvest and sale proceeds		11	3	8
	PC9. record cost of inputs and other miscellaneous expenditures		11	4	7
			100	30	70
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 premises		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		5	2	3

	accidents and emergency situations				
	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 feeding is avoided		5	2	3
	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	400	400	120	280
	Percentage Weightage:			30%	70%
	Minimum Pass% to qualify (aggregate):			70%	